LIFE SAVING

GEORGE E. GOSS

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FIG. 1. THERE IS A LIFE LOST BY DROWNING IN THE UNITED STATES AND CANADA EVERY HOUR OF THE DAY

LIFE SAVING

By

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To

MY BELOVED PARENTS

WHOSE SACRIFICE AND DEVOTION HAVE MADE POSSIBLE THIS WORK, AND TO MY BROTHERS ROBERT AND MILTON, I GRATEFULLY INSCRIBE THIS BOOK.

PREFACE

In most cases it is impossible to indicate in detail my indebtedness for the lines of thought which are here interwoven. The general considerations which are covered in this subject have been canvassed by enough organizations to make extensive originality out of the question. Whatever freshness of thought this book may possess will be found in the fact that only after a long and careful study of the various agencies at work at the present time have the conclusions contained herein been reached. Particularly have I in mind the handbooks, pamphlets, reports, and other material that have been issued by existing organizations, and it is with a deep sense of gratitude to the societies engaged in this work and to the individuals who have aided me in the correlating of this material that I present this book. I am especially grateful to G. H. Mummert, Physical Director Fort McKinley, P. I., Young Men's Christian Association, who appears with the writer in the illustrations.

GEORGE E. GOSS.

July 1, 1916.

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I

A CALL TO DUTY

Accidents in the Water Occur Constantly

It is the sacred duty of every normal person today to know how to save life in the water. Drowning accidents occur under varying conditions, and no age, sex, or class of society is exempt from this danger. The suddenness of death is remarkable. When the immersed person is unable to swim, or when no means of rendering assistance is at hand, often only a few moments pass before all is over.

The frequency of drowning accidents is due to various causes. One of these is the development of suburban life, in consequence of the congestion in our large cities. The ferryboats which ply across our rivers are crowded to overflowing with business employes, pleasure seekers, and the thousands of others whose various duties call them into the city.

The statistics of any large city show that the number of accidents which occur because people are jostled off these boats is very large.

The growing popularity of the summer vacation, especially in America, is another cause. The excursions on lakes and rivers and the growth of camp life menace every year thousands of careless pleasure seekers. At the largest of our bathing beaches, life guards are provided throughout the summer to prevent any disasters. However, there are hundreds of beaches that are used extensively where there is no one in charge—not even a buoy or rope placed enabling anyone to render assistance. This is especially true at the "Old Swimming Hole," where boys congregate by the dozen. Often this is an exceptionally dangerous place, at the bend of a river, or in a sheltered cove in a lake where the water is very deep.

Even in our playgrounds there have been fatalities, when no guard was kept near the wading pool and little children were allowed to "paddle" at will. In the indoor swimming pools, lack of supervision creates as much danger as anywhere. Many pools are open

at all times to the members of the organizations without ever having an instructor or guard present. Thus the "dare-devil" young man who swims alone, or who tries to outdo his friends in long swims under water or in fancy diving often meets an untimely end.

As great a danger as any other lies in our winter skating. In the far north, where the ice comes early and remains thick all winter, this is not so evident, but in sections where throughout the winter there is alternate freezing and thawing, accidents are numerous. The cutting of the ice on lakes used by skaters always causes conditions that must be safeguarded or fatalities will occur. The new ice freezing over an area that has been cut looks to the unsuspecting person, especially at night, just as safe as the old ice, and before he is aware of the danger he is struggling for his life.

In the United States and Canada every year there are from 20,000 to 25,000 accidents involving the possible loss of life. Clearly the average man is certain some day to be called upon to render help. No man prepares for an emergency in a moment, and unless one has had previous study and practice, he must

stand idly by, in the presence of a drowning or other accident, willing to do anything in his power, but unable to give the least assistance.

The Loss of Life is Frightful

The loss of life from drowning in individual communities varies with the length of the city water front, and the amount of protection provided for the citizens. In New York City, with its hundreds of miles of water front, accidental drowning, instead of increasing with the amazing growth of population and the extended interest in water sports, is decreasing at a rate of twenty persons a year. In a large measure this is due to the efficient work of the U. S. Volunteer Life Saving Corps and the more widespread knowledge of life saving. In the United States and Canada we face the appalling fact that between 6,000 and 7,000 lives are lost annually by drowning. The destruction of an American battleship and crew staggered our nation and precipitated the war with Spain; and yet drowning fatalities destroy the lives of enough men every two months to man our largest warship. This goes on continuously while we sit back as mere onlookers.

It is only because we are accustomed to this waste of life, and because we are likely to think that it is inevitable, that we go about our daily work, thinking little and apparently caring less about the possible means of prevention. Every such death means a saddened home. But most of us remain indifferent until someone who is dear to us is lost, and we realize that if we had had the necessary knowledge the life might have been spared.

This loss of life is heaviest among young men, and in almost every instance disaster could have been averted if some one present had learned the art of rescue from the water. A few summers ago, in a small New England town on the banks of a very treacherous river, a young man with a few companions went swimming one afternoon. While trying to swim to shore from a raft stationed a little way out in the stream he went down. Instead of ascertaining exactly where he disappeared, his companions all ran for help. Consequently, when assistance arrived no one knew where to look for him, and his body was found four hours afterwards in only five feet of water. If one of his companions had had

the judgment to ascertain where he disappeared, even though he could not effect the rescue, the young man's life might have been saved.

Comparatively Few Can Render Assistance

The largest factor in this frightful loss of life is that so few men today are prepared to render assistance. The percentage of men who are able to swim is very small, and out of the thousands who know how to swim, fewer still have any definite and clear idea as to the method of procedure in case of an accident in the water. Many a man, with no knowledge of the methods of rescue, heroically but foolishly has lost his own life in the endeavor to save a drowning person. Today not more than one out of every two hundred young men of the United States and Canada, between the ages of eighteen and thirty, has a clear idea of the principles of life saving. If the loss of life is to be reduced, this percentage of men equipped to give aid must be increased. To this end there must be a close study of the methods now used to break the different types of holds by which

drowning persons grasp a rescuer, followed by the application of these methods in definite practice.

Anyone Can Learn

The simplicity of life saving is apparent only to one already equipped with the knowledge. While the element of danger is always prominent, it is but a small factor in the mind of the rescuer who has a thorough understanding of what to do. The statement that practically every man, woman, and child can learn to swim is not an exaggerated one, and this is just as true of life saving. If you can learn to swim, you can learn to save life, and the acquiring of this knowledge is so simple that no man can be excused.

Everyone Should Learn

It is almost criminal to shirk so obvious and so important a duty. The test of true citizenship is to prepare yourself to meet the needs of your fellowmen. There have been enormous sums contributed for hospitals and medical research. We have many very useful and worthy societies to prevent crime and vice and to check the waste of our forests

and the defacement of our scenery, but there are few for the rescuing of drowning persons. Congress appropriated millions of dollars without hesitation for relieving distress from a calamity such as befell the people of San Francisco. Every American approved of its action. Is it of no public interest that there is a life lost from drowning nearly every hour of the day? Our people face commercial and political problems with tremendous earnestness and determination. Why should they turn their backs on this vital problem of life-waste?

Looked at on the economic side alone, the question is a serious one. If we take the figures of Professor Irving Fisher, of Yale, and appraise each life lost at only $1,700, and each man's average earnings for a year at only $700, the economic gain to be obtained from preventing this enormous loss of life by drowning exceeds ten millions of dollars annually. Far greater urgency is given to the problem when one thinks of the higher values that are lost when a young man, just equipped for his life's work, is drowned simply because no one who knows how to rescue him is at hand.

The Knowledge Gives a Sense of Power

Men who are seeking to make the most of their lives are bound to keep certain ideals before them. High among these rank power of achievement and capacity for friendship. In learning to save a human life in the water a man gains the power which comes from achievement, and equips himself to fulfil the highest demands of friendship. All know that in nearly every case of saving from drowning the rescuer assumes tremendous personal risk, and shows a devotion not unlike that of the soldier on the battlefield who, in rescuing a comrade from peril, is willing to lay down his life for his friend.

One should strive to become proficient, if only for selfish reasons. There is hardly a time in a man's life when the thrill of achievement so stimulates him and fills him with righteous pride, as when single-handed he has saved the life of someone who, except for his efforts, would have been drowned.

These Facts Constitute a Call to Duty

An irresistible call to duty is thus presented to organizations like the Young Men's Christian Association, which holds itself responsi-

ble for the well-being of young men and which has as its emblem the triangle, denoting the all-round development of man, spiritually, mentally, and physically. There are at least four hundred Young Men's Christian Associations that have swimming pools, and, in addition, many have boat clubs and camps where members spend much time in or upon the water. Every such Association should have a swimming and life saving club. An illustration of what can be done along this line is shown by the work of the Student Life Saving Corps of the International Young Men's Christian Association College at Springfield, Massachusetts, where a branch of the U. S. Volunteer Life Saving Corps has been established. This is described in a later chapter in this book.

This appeal should reach not only to Young Men's Christian Associations, but to the Boy Scouts of America, the Young Women's Christian Associations, and to all other organizations that have as their highest object service to their fellows and the development of character. Let them strike now and join forces with those already at work for a national propaganda of instruction in life saving, and

for advocating the general adoption of swimming and life saving drills as a branch of elementary education in all cities. With the existing societies as a nucleus, new impetus will be given the movement by every individual, organization, and community that takes part in it. Thus it will gradually extend to every corner of the United States and Canada, and reduce to a minimum this danger that has menaced life on our continent for so long.

II

ESSENTIAL SWIMMING STROKES TO USE IN RESCUE WORK

Developing Confidence in the Water

Swimming is an art that has no superior for the development and preservation of health. Its practice produces most beneficial results upon the respiratory organs and thereby aids the circulation and purification of the blood. It also greatly stimulates and strengthens the muscular and mental capacity. As a pastime it has few equals. The pleasure of swimming, whether outdoors or in a natatorium, can be appreciated only by the good swimmer. The average man tires after a few yards have been covered, and he experiences but little of the exhilaration that comes to an expert as he glides swiftly and smoothly through the water. To get real enjoyment and pleasure out of swimming, one must be able to secure the greatest amount of good with the smallest expenditure of energy.

In other words, he must be able to swim and not merely to struggle through the water for a given distance.

There have been volumes written telling the beginner how to learn to swim, and although many methods are advocated by different writers, I believe that almost all instructors will agree that the first essential is to develop confidence in the water. After the preliminary fear of this element is taken away, swimming becomes simply the learning of new muscle coordinations for the stroke that is being taught. Generally beginners are afraid of having the face go under water. Nothing will give more confidence to the uninitiated than to stand waist deep in the water, and after grasping the hand of the instructor, place the face under water, and open the eyes. Care should be exercised always to have the lungs full of air, so that the first act upon raising the head will be to exhale, thereby blowing the water away from the nose and mouth. Almost anyone can hold his breath for ten or fifteen seconds, and when the first sting of having the eyes opened is past, the pupil will see the bottom of the pool and immediately will gain confidence through an actual knowledge

of the element in which he is. No amount of telling will teach this, but the pupil will learn it in a very few attempts. The instructor can illustrate by vertical or upright floating how the human body has nearly the exact specific gravity of water (Fig. 2). Seeing this, the pupil can be taught that it is

Fig. 2. Vertical Floating

the things we *do* and not the things we *omit to do* that make the body sink. At no time in swimming, except in racing, should there be a condition of stiff or rigid muscles. All muscles should be relaxed with the sole thought of endeavoring quietly and easily to follow the instructor's advice.

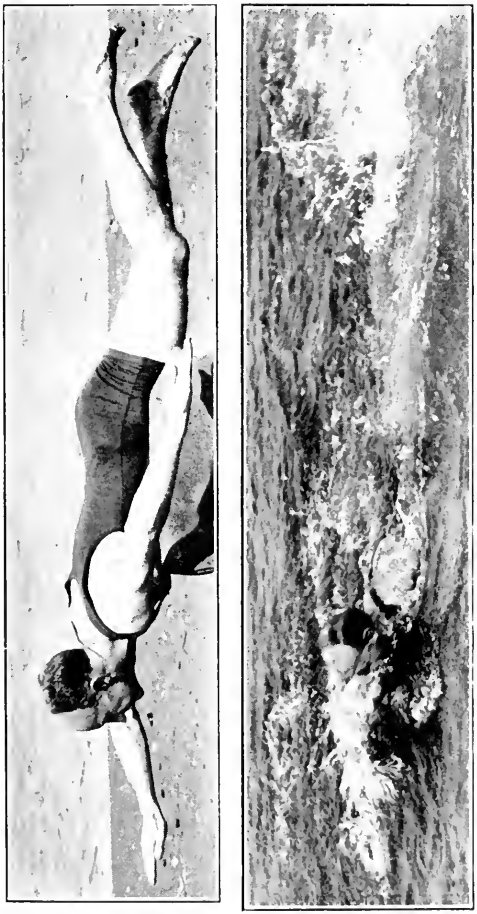
Do not depend too much upon your relatives or friends to teach you to swim. There

FIGS. 3–4. DOUBLE OVERARM STROKE: START—MIDDLE

is a great deal of so-called fun indulged in by the thoughtless friend when he "ducks" a beginner, thereby adding to his fright. On the other hand, if you can engage a recognized swimming instructor, by all means place absolute confidence in his ability and in his willingness to do just the things that should be done, and his desire to keep you from any danger. It is not the object of this book to try to teach any new methods in swimming, but simply to describe anew for the sake of the reader the essential strokes that must be acquired before taking up the study of life saving.

Double Over-Arm Stroke

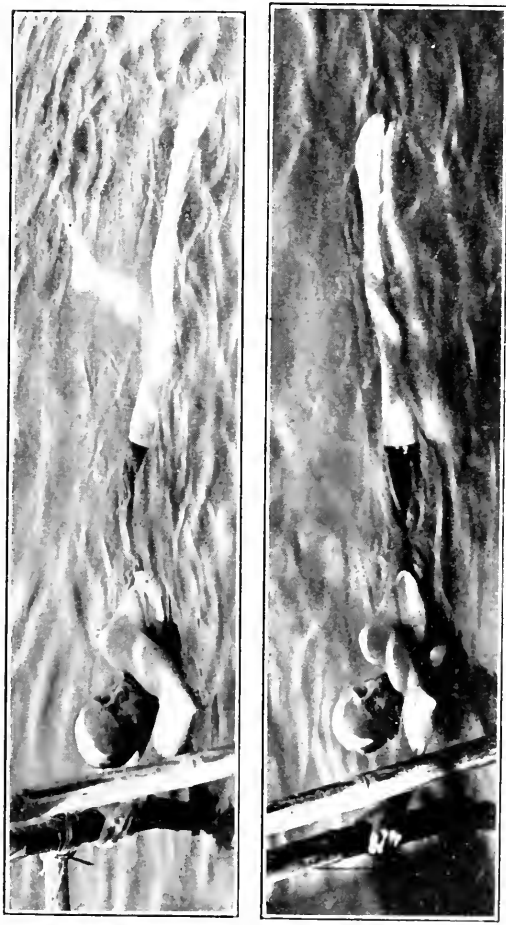
As this stroke enables one to get through the water more quickly than any other, regardless of the type of leg kick that is used, it is advisable to use it in almost all cases of rescue work where speed in reaching the drowning person is essential. This stroke has the same arm motion as both the "Crawl" and the "Trudgeon." The swimmer lies flat upon the breast, with the arms extended beyond the head, but never to full length (Fig. 3). They work alternately, that is, the



FIGS. 5–6. DOUBLE OVERARM STROKE: FINISH—IN ACTION

left hand enters the water with a quick knife-like downward thrust with the hand in a spooned position and the fingers held together although not rigid (Fig. 4). The hand is driven through the water at a brisk pace, until it reaches the hip; then it is lifted clear of the water, and with the elbow still bent it is brought forward with a kind of feathering motion of the back of the hand on the water (Fig. 5). As the left arm finishes its backward pull, the right begins and they work alternately. Inasmuch as it is almost as necessary to see where the person in danger is located as it is to use speed in reaching the spot, it is advisable to swim this double over-arm stroke with the head out of the water facing the person in distress. If this is practiced it eliminates the question of having the face under water and also how and when to breathe (Fig. 6).

Regarding the leg kick for this stroke, either the "Scissors" or "Crawl" kick can be used according to inclination, but the latter is preferable. In this the legs are kept fairly stiff at the hips and the knees are held close together. Each foot strikes the water with the instep, and the feet are never moved



FIGS. 7–8. SIDE STROKE: LEGS OPEN—LEGS CLOSED

more than twelve to eighteen inches apart from heel to toe. The "thrash," as it is termed, is performed without relation to the arm stroke, and it needs considerable practice to be continued for a long distance.

Side Stroke

In studying the method of swimming the side stroke, the pupil should at all times remember that he is swimming on the side and not on the breast. The best way to learn the "Scissors" kick, which is the leg motion in this stroke, is to take hold of a rail or side wall of the pool, having left hand about water level and the right hand about eighteen inches below. Turn the body upon the right side and have the legs move in a line parallel to the surface of the water. The first movement consists in bringing the upper or left leg forward a short way and keeping the knee of said leg straight (Fig. 7). The under or right leg should be moved back, bending it from both hip and knee. When the feet have reached a spread of from two to three feet (according to size of pupil) the legs should be straightened and brought together with a decided snap (Fig. 8). The opening of

FIGS. 9–10. SIDE STROKE: START—FINISH

the legs should be executed very slowly, but all the drive that is possible should be put into the closing.

The arm action consists in the right or under arm being started from beyond the head with a sharp downward pull, at right angles to the water level, lasting until it brushes the thigh, with the hand spooned (Fig. 9). The left or upper arm is placed on the surface of the water a short distance beyond the face and the stroke of this arm starts as the under arm begins recovery (Fig. 10). It moves close to the chest on a line at right angles to the water level and the power of both arms is derived from this pulling motion. The legs are opened at the finish of the recovery of the upper arm stroke, and are snapped together as this arm is pulled down. The under arm accomplishes its recovery through the water to its position beyond the head by the hand being turned sideways, thumb-side up, so as to create the least resistance, while the upper arm in recovery is taken beyond the head through the air. Breath is taken as the upper arm comes down (Fig. 11). It is, of course, evident that in case of rescue work both arms cannot

always be used, and when the rescuer holds the drowning person in his left arm, the

Fig. 11. Side Stroke in Action

stroke of the right, or under arm, and of the legs should be alternating.

Breast Stroke

There is perhaps more criticism today of the breast stroke than of any other; yet I believe it has a definite place in life saving. It is the only stroke that a rescuer can use when close to a struggling person, and be prepared at all times for an emergency. He can plainly see any movement of the drowning person and can easily keep away from him by using this stroke, until the moment when he decides to dash in and "get his hold"

FIGS. 12–13. BREAST STROKE: START AND FINISH—COUNT ONE

FIGS. 14-15. BREAST STROKE: COUNT TWO—COUNT THREE

(Fig. 12). The reason for most of the criticism of this stroke lies in the fact that so many are ignorant of its technique and of the ease with which it can be used after it is mastered.

The pupil should lie easily on the breast on the surface of the water. It will be found that if a strong push-off is given from a side wall or float, the pupil can get into this position with the arms extended beyond the head. The first stroke is made with the arms; on count one, the hands should be turned back to back and the arms drawn backward through the water, just below the surface and parallel to it until they are at right angles to the body (Fig. 13). On count two, the elbows are bent backward and the hands are brought in close to the chest with the palms down and the thumbs close together. At the same time the legs, which previously were extended to full length, are brought up as far as possible by bending the knees, without allowing the knees to come under the body (Fig. 14). In this motion it adds force to keep the soles of the feet together. On count three, the arms are pushed forward through the water, nearly to

full length and with palms down. At the same time the legs are kicked outward (Fig. 15), backward, and together, making an arc, and it is this sharp snap together that gives the powerful "frog kick."

It is absolutely essential, if this stroke is to be executed correctly, for the pupil to pause a full count after executing this last movement, allowing the body to glide through the water as a result of the kick (Fig. 16). The frog kick is often incorrectly performed

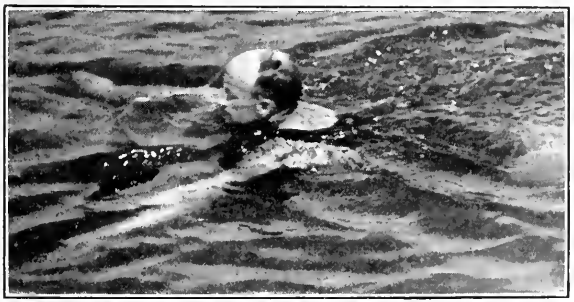


Fig. 16. Breast Stroke in Action

by the pupil who endeavors to put force into a back kick of the legs. More power can be put into the squeeze together of the legs, after their spread. This acts as a vise and, as something must give, the body is shot

forward at quite a rapid speed. This is made possible because the powerful thigh muscles are the ones that are used the most.

Back Stroke

The back stroke is in some ways the most essential to the person who is studying life saving, as it is used in three of the methods of rescue. In all three methods, however, the struggling person is supported by the hands of the rescuer, who therefore has to get all his propelling force from the use of his legs. The kick is performed exactly the same on the back as the frog kick is on the breast. The legs are first in an extended position, with the pupil lying on the back and holding his body in place by grasping the life rail, or side of float, behind the head (Fig. 17). On the first count the legs are drawn up with the soles of the feet together and the knees spread wide apart (Fig. 18). They should be drawn up easily and slowly. On the second count the legs are kicked outward, backward, and together, making an arc, and all the force possible is put into the squeeze together (Fig. 19). Usually the legs are brought up too far.

FIGS. 17–18. BACK STROKE: START AND FINISH—COUNT ONE

FIGS. 19–20. BACK STROKE: COUNT TWO—IN ACTION

In both this stroke and the frog kick on the breast the determining point should be found as follows: lie on the breast on the floor or ground and bring the legs up with feet together as far as possible, keeping the feet on the floor. It is impossible to get the knees under the body in this movement and it shows exactly how far the knees should be drawn up in the kick of both breast and back strokes. The arms can be ignored in this stroke. It is a good plan, after the pupil is able to swim by the use of the legs alone, to put the hands up out of the water while swimming on the back. This is difficult, as the hands, when deprived of the buoyancy of the water, usually sink the body a foot or more under water. This enables a pupil to be more proficient when he starts practice on rescuing a person who must be held up in the water as well as towed (Fig. 20).

III

A TYPICAL RESCUE

Going to the Rescue

The first essential to remember in rescuing a person struggling in the water in danger of drowning is to lose no time in going to his aid. He may sink and not rise again, in which case it may be very difficult for the rescuer to find the object of his search. Although speed in reaching the unfortunate person is the first essential, care should be taken, if any distance has to be covered, not to become tired by too fast swimming. Especially is this true if the person in danger has an upturned boat, or other buoyant aid, to help him in keeping afloat. In this case it would be foolhardy to swim at top speed and then be exhausted when the time comes for the hard work of caring for the victim.

What Clothing to Remove and How

It is a matter of judgment whether the

rescuer, before entering the water, should remove a portion of his clothing. Some writers deem it a waste of time, but it seems evident that if, while running to the water's edge, a man can divest himself of coat, trousers, and shoes, he is in a much better condition for the work facing him. In the case of a person falling from a swiftly moving steamer, the rescuer, in order to be close to the victim, would save time by jumping immediately and removing his clothes while in the water. In no event should a man remove only his coat, if he has no vest on and wears suspenders. The latter will cause trouble by sliding off and allowing the trousers to slide part way down, perhaps just when the rescuer needs absolute freedom of movement. It is necessary to use cool, quick judgment in this matter as a moment's delay may mean the loss of a human life.

Method of Entering the Water

If entering the water from a beach, do not wade out farther than knee deep; then make a long dive and swim with the double overarm stroke. This enables you to keep glancing at the drowning person without re-

tarding your speed very much. Before diving take a full inhalation of fresh air and avoid staying under the water for a long period, as it exhausts one. Also by so doing you lose sight of the victim. Where weeds abound, and there is danger of entanglement, progress should be made very slowly, in the direction of the stream. Great care should be taken that weeds or eel-grass do not wind around the would-be-rescuer, making it difficult for him even to help himself. If the rescuer has to enter the water from a great height, as from a bridge or vessel, and is unaware of the depth or nature of the water, it is best to drop in feet first.

Method of Approach

When nearing a drowning person the rescuer should proceed with caution, preferably using the breast stroke; and if there are two or more persons in danger, single out the one in the greater distress (Fig. 21). In some cases, talking in a firm, quiet manner to the struggling person is helpful, and makes the rescue less dangerous. There is always an element of risk from the clutch of a drowning person, although this is diminished when the

rescuer has been properly instructed as to how to effect a release. The first essential is always to get behind the victim, as he will

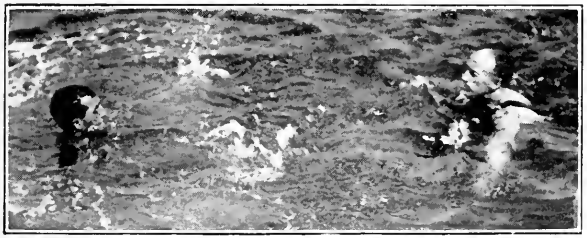


FIG. 21. APPROACHING A DROWNING PERSON

be less dangerous in this position. Some writers state that it is madness to approach a drowning person from the front. With many it might lead to disaster, but with a swimmer who knows the right way to deal with the struggling person, the danger is minimized. If it is at all possible to approach him from the rear, do so by all means. Frequently, diving and swimming under water beyond the person accomplishes this, but do not keep away from the front until it is too late; at least, know what to do in case it is inevitable. If a person in distress is approached from the front and grasped firmly when being turned on his back, he will prob-

ably cease struggling and submit quietly when he feels himself supported and able to breathe freely.

Grappling with the Victim

Through some mistake the rescuer may find himself seized by the drowning person, who will probably not let go until forced to do so. If this should happen, there must be no hesitation or scruple in using any means necessary to obtain release. If a swimmer has sufficient knowledge of the methods of release, there are very few cases where it is ever necessary to do anything else. The antique method—and the prevalent thought with many—is to strike the victim in order to get free. This is dangerous, for when the person is rendered unconscious he will sink immediately to the bottom. Moreover, if he receives the blow while he is being towed to shore, it is hard to define how much of the existing condition is due to drowning and how much to the blow.

One necessary point for the rescuer to remember is to take advantage of his knowledge of the water and keep uppermost. This will aid him greatly, as it will weaken the drown-

ing person and make the task of getting free much easier (Fig. 22). The best method of approach from the front is to swim on the

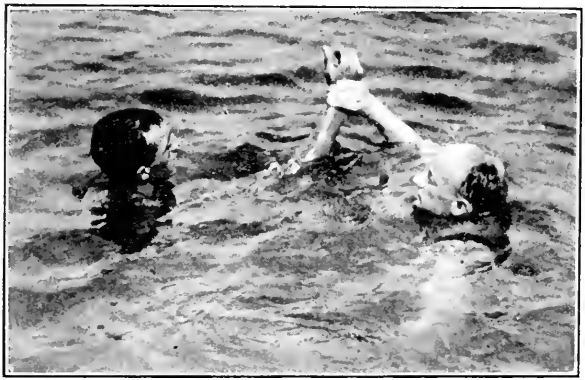


Fig. 22. Getting Behind a Drowning Person

breast, suddenly reach out with the right hand, and grasping the victim's right wrist, pull him around immediately on his back into a towing position.

Towing to Shore

When the rescuer manages to get behind the victim he should tow him to the nearest point of safety, unless that point is directly against a head tide, in which case he should

try to take it on the quarter. One of the methods of rescue described in Chapter V will be found to be the easiest and safest way of towing to shore.

FIGS. 23–24. WRIST HOLD—BREAK FOR WRIST HOLD

IV

METHODS OF RELEASE

If a drowning person catches hold of you in his struggles, remember the first essential is to keep cool and collected yourself. The knowledge of the various methods of release is worthless without this confidence. Then work easily and quickly for your "break."

1. When Held by the Wrists

When the rescuer is held by the wrists (Fig. 23) by an ordinary grasp, he should raise his arms forward and upward, then snap the arms simultaneously downward and outward with a sharp jerk (Fig. 24). This will make the leverage come against the drowning man's thumbs which will break or be dislocated if he fails to let go (Fig. 25).

If the rescuer has his hands low in front of him, and is then grasped by the wrists, he should reverse this movement and throw his arms upward and outward.

Fig. 25. Break for Wrist Hold in Action

2. When Clutched Around the Neck from the Front

If grasped around the neck from the front (Fig. 26), the rescuer should lean well over the drowning person, and at the same time place the left hand in the small of the victim's back and the heel of the right hand (coming up outside of the victim's arm) on the point of the jaw with index and middle fingers squeezing the nostrils. Then with all possible force push away with the right hand and pull in or hold tight with the left hand (Fig. 27). This will force the victim's head under water and the holding of the nose will make him open his mouth for breathing. As he is under water choking will ensue. All

FIGS. 26–27. NECK HOLD FROM FRONT—BREAK FOR NECK HOLD

this will tend to loosen his hold and will enable the rescuer to gain complete control (Fig. 28).

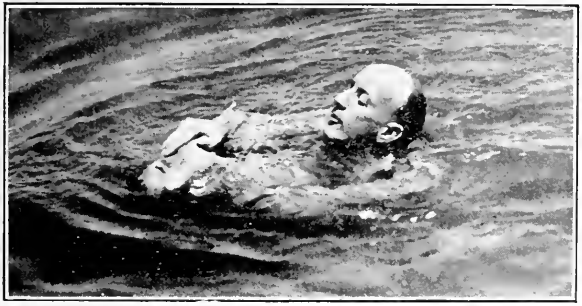


Fig. 28. Break for Neck Hold in Action

3. When Clutched Around the Body and the Arms

When gripped in this manner the rescuer must lean well over the drowning person, take a deep breath, and either withdraw both arms in an upward direction in front of his body, or try to slide downward until he is in a position to adopt the method for release when held around the neck from the front (Fig. 29). In either case the rescuer should place his left hand on the victim's right shoulder and the heel of the right hand

FIGS. 29–30. HOLD AROUND BODY AND ARMS—BREAK FOR THIS HOLD

against the victim's chin, at the same time bringing up his right knee against the pit of the victim's stomach (Fig. 30). Then, by means of a strong, sudden push, stretch the arms and legs straight out, throwing the

FIG. 31. BREAK FOR HOLD AROUND BODY AND ARMS—IN ACTION

whole weight of the victim's body backward. This sudden movement will free the rescuer (Fig. 31).

4. STRANGLE HOLD

This is the most dangerous of all holds, and occurs when the struggling person gets hold of the rescuer around the neck from behind (Fig. 32). To break this, the rescuer should tread water so that both heads are

FIGS. 32–33. STRANGLE HOLD—BREAK FOR STRANGLE HOLD

above the surface, grasp the victim by each wrist—left with left and right with right—and then, after leaning slightly forward, throw his head back suddenly and with force, so that he will strike the victim on the nose with the back of his head and stun him (Fig. 33). The pain from the blow on the nose will be so great that the rescuer can pull the victim's arms apart—as he has hold of him by the wrists—and turn a back somersault which will drive the victim under the water. If the victim's arms have not become loose, reach for his fingers, and bend one or two of them back until the pain is too great

Fig. 34. Break for Strangle Hold—In Action

to be endured (Fig. 34). Between the pain and the ducking you can get free.

FIGS. 35–36. BODY HOLD FROM REAR WITH SCISSORS HOLD ON LEGS—BREAK FOR THIS HOLD

5. Body Hold from Rear, with Scissors Hold on the Legs

This hold occurs when the drowning person grasps the rescuer around the body from behind and then obtains a scissors hold on his legs (Fig. 35). The victim obtains a very strong hold in this way and one that is very difficult to break. The rescuer should try to get his lungs full of air so that he can remain under the water, if necessary, while breaking the hold. Turning, he should place one hand over the victim's face and nostrils and press tightly, at the same time pushing him away; with his other hand he should grasp one or more of the drowning man's fingers which

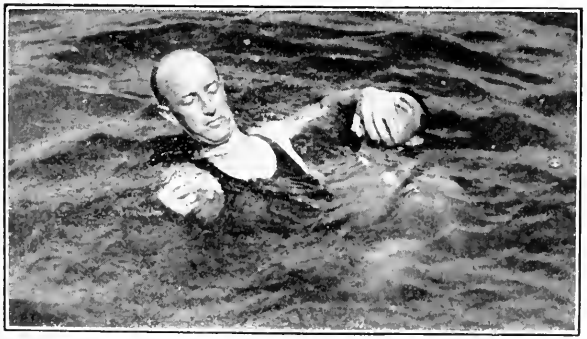


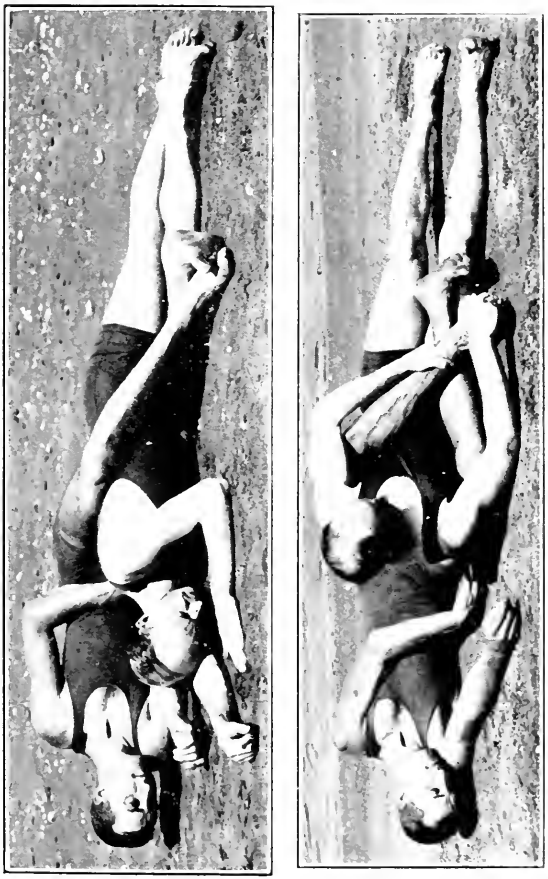
Fig. 37. Break for Body Hold from Rear with Scissors Hold on Legs—In Action

are in front of his abdomen, and bend them back until the grasp is weakened or loosened entirely, enabling him then to wrench the arms apart (Fig. 36). When the pain of his bent fingers becomes too great for the victim to stand, his legs will also become loosened and the rescuer can kick his legs free (Fig. 37).

6. Scissors Hold on the Body

This occurs more frequently than No. 5, and is caused by the struggling man trying to climb up the rescuer's back in order to be nearer the surface (Fig. 38). The rescuer should try to get to the surface, even if in a horizontal position, to get some air. Then he is able to continue the struggle under water. The rescuer should take the ankle of one foot in the left hand and the toes and instep of the same foot in the right hand, and, using the left hand as a vice, should grind the foot in a circular motion with the right hand (Fig. 39). The pain caused is so great that the victim will let go immediately (Fig. 40).

Note: It should always be remembered that after breaking a hold the rescuer should never let the victim get away from him, but should



FIGS. 38 39. SCISSORS HOLD ON BODY—BREAK FOR THIS HOLD

immediately turn him into a towing position. A rescuer should realize that a drowning per-

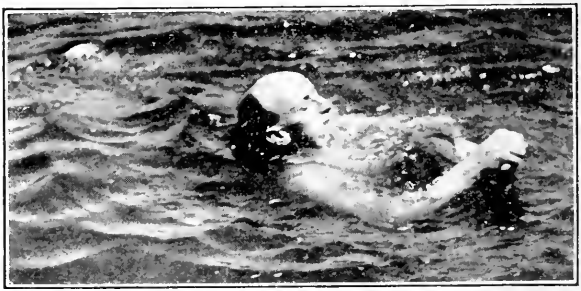


Fig. 40. Break for Scissors Hold on Body—In Action

son will grasp anything that comes within reach, his whole thought being to get his head above water. There are combination holds not described here that the drowning person may use, but these given are considered the most essential ones, and a thorough knowledge of them will enable the rescuer to control conditions.

V

METHODS OF RESCUE

Conduct of the Rescuer

Rescuers must at all times be governed by circumstances, using judgment as to which method to adopt in conveying the drowning person to shore. They should take care to avoid wasting their strength against a current or tide; rather floating with it and gradually making for shore, or else waiting until a boat or other aid arrives. They should remember that it is of the utmost importance to keep the face of the drowning person above water, even though their own should become immersed. All jerking or tugging should be avoided, and they should swim with a steady stroke of the legs, saving all their strength for the work confronting them. When carrying a struggling person on the surface of the water, it aids greatly to keep the elbows of the victim well out from the sides, as this expands the chest, inflates the lungs, and adds buoyancy. The legs should be kept well

up to the surface, the body being almost horizontal. Always aim to keep the whole body immersed, except the face, as this adds to buoyancy. There are various methods of rescue suggested by different writers, some of which are relics of antiquity and easily and wisely supplanted by better and more modern means. Some very practical methods are advocated by various life saving organizations, and those who are ignorant of what to do in cases of emergency can, in the course of ten or twelve lessons, become fairly proficient in their use.

1. When the Victim is Passive

An easy method of assisting a tired swimmer, or one who has been attacked by cramps, as well as any other who will remain quiet, is to allow the person, when lying on his back, to place his hands upon the rescuer's shoulders, close to the neck, with his arms at full length (Fig. 41). The rescuer being uppermost, and having arms and legs free, swims the breast stroke (Fig. 42).

Note: This method should be used only when the person is absolutely passive, and capable of thinking for himself, the danger

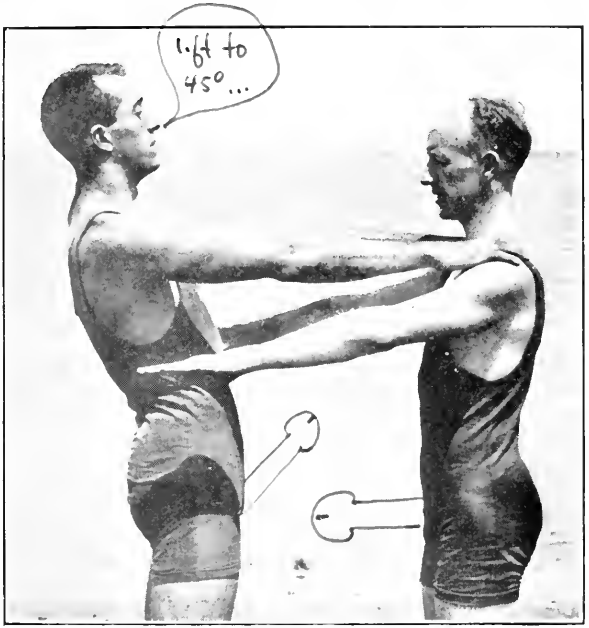


FIG. 41. RESCUE WHEN VICTIM IS PASSIVE

FIG. 42. IN ACTION

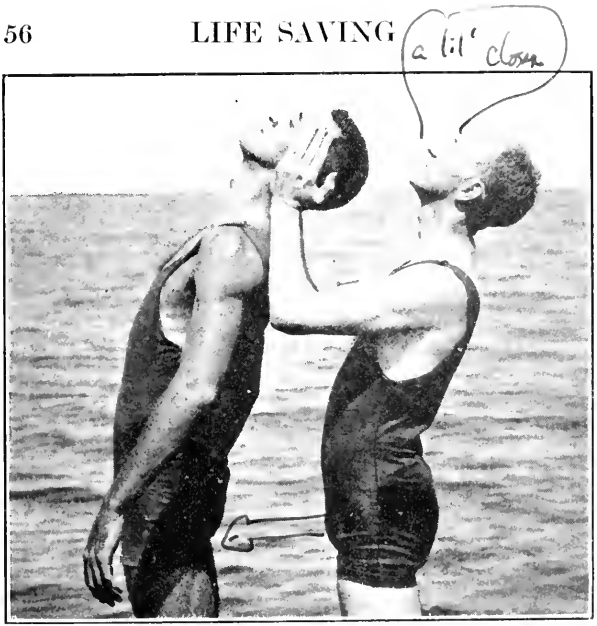


FIG. 43. RESCUE WHEN VICTIM IS NOT STRUGGLING

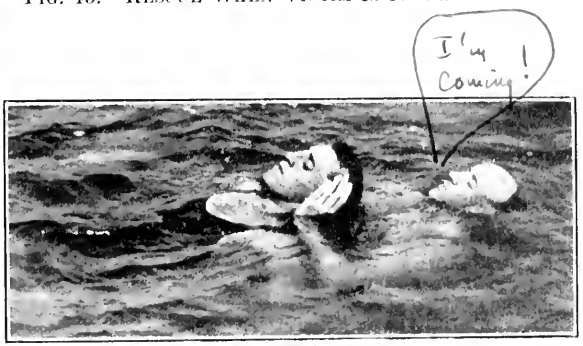


FIG. 44. IN ACTION

lying in the chance of a quick grasp of the rescuer's throat by the victim if he loses control of himself.

2. When the Victim is Not Struggling

When the drowning person is not struggling, turn him on his back (by methods described in Chapter IV), place your hands on either side of his face, so that the palms of the hands cover his ears and your fingers point to the top of his head (Fig. 43). Then lie on your back and swim toward shore, using the frog kick, taking care to keep his face above water. Lie well back as you tow him, so that both bodies are in nearly a horizontal position (Fig. 44).

3. When the Victim is Struggling Moderately

If he is struggling, the drowning person is more difficult to manage. Turn him on his back as before, and take a firm hold of his arms just above the elbows, letting the fingers sink into the biceps (Fig. 45). Draw his arms upward at right angles to his body and swim on the back, using the frog kick. This

FIG. 45. RESCUE WHEN VICTIM IS STRUGGLING MODERATELY

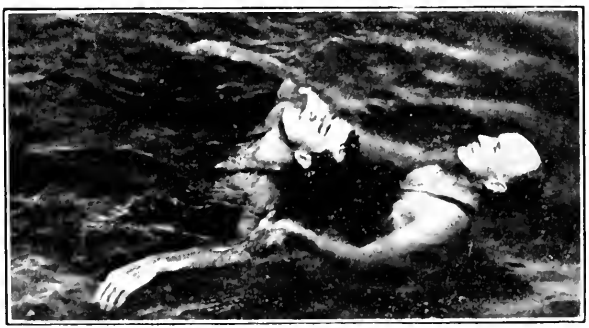


FIG. 46. IN ACTION

FIG. 47. RESCUE WHEN VICTIM IS STRUGGLING VIOLENTLY

FIG. 48. IN ACTION

will enable the rescuer to have complete control of the victim (Fig. 46).

4. When the Victim is Struggling Violently

If the arms are difficult to grasp, or the struggling is so violent as to prevent a firm hold, slip the hands under the armpits of the victim and place them on his chest (Fig. 47). Then lie on your back and use the frog kick as before. This prevents any possibility of the victim's turning loose and grasping the rescuer (Fig. 48).

5. For Side Stroke Swimmers

Place left arm under the left arm of the person being rescued, with the hand crossing the chest to the other armpit, or grasping the clothes, thus leaving the right arm free with which to propel yourself (Fig. 49). This method is very useful to side stroke swimmers, as rescuers can use either the scissors or the frog kick, as well as have the use of one arm (Fig. 50).

FIG. 49. RESCUE FOR SIDE STROKE SWIMMERS

FIG. 50. IN ACTION

6. When Long Distance Has to Be Covered

In case of having to cover a great distance with a person who is passive and quiet, or with one who can easily be controlled, a simple and effective method is to swim the side stroke (Fig. 51). The person assisted should be behind the rescuer with one hand on his upper shoulder. It will be found in many cases that a person who knows nothing of swimming will feel so free when being rescued in this manner that he will aid a little by using his free hand and his legs (Fig. 52). It is obvious that this aid is very material if a long distance has to be covered.

Recovering the Victim from a Capsized Boat

If you see a pleasure boat that has been upset, the following methods of rescue should be adopted. Swim at once to the boat. Do not seize one person and swim to shore with him, but get all the party to the side of the overturned boat and make them hold fast to it. If one of the number has gone down, tell those remaining to hang on to the boat and

FIG. 51. RESCUE FOR LONG DISTANCE

FIG. 52. IN ACTION

then dive for the one that has sunk. When you bring that person up, swim to the boat, and hang on for a time, quietly encouraging the others. If no one is near to come to your assistance with a boat, turn the unconscious person on his back and tow him ashore by No. 2 or No. 5 of the methods of rescue.

When you get ashore, give hurried instructions in resuscitation, if there is anyone present to perform it, and then hurry back to the boat as quickly as possible, as the remaining victims may become chilled or lose heart. When you get to them, take the painter of the boat and swim ashore, towing both boat and victims. This is not as hard as it may seem, and it is the safest method. If the boat is a large one it may, however, be easier to use anything that may be floating near you, as an oar or plank. Do not allow the victims to attempt to swim to shore unless you are positive that they can do it, as distance on the water is always deceptive.

Recovering a Body from the Bottom

The specific gravity of the human body in its natural condition is about equal to that of fresh water. The bodies of unusually fleshy

persons, and of women, generally are lighter than the amount of water that they displace. The belief that a drowning person rises three times before he finally sinks is a fallacy. The question whether he rises at all, or how often he does so, depends entirely upon circumstances. After a person has sunk to the bottom, if the water is quiet, the exact position where the body lies may be known by the air-bubbles which will occasionally rise to the surface. In still water the bubbles rise perpendicularly, in running water they rise obliquely, so that the rescuer must look for his object higher up stream than where the bubbles appear. In running water the body will be carried along, and should be looked for in a straight line in the direction that the current is running. On reaching the drowning person who has sunk to the bottom, the rescuer, after grasping the body, should place one foot on the bottom and then give a vigorous push upward, which will cause both persons to rise easily to the surface.

The body after death remains at the bottom, until by some means its specific gravity —that was increased by swallowing water, etc. —becomes less than that of the bulk of water

it displaces. This is brought about by decomposition, causing a generation of gases which distends all the cellular tissues, giving the puffed appearance which is so horrible. The decomposition is modified by various circumstances, heat or cold, condition of the water, depth of water, whether stagnant or moving, and the condition of the body before death. Thus it is evident that no period can be assigned definitely as to when the body will rise. All these various elements in the problem, therefore, have to be considered when striving to recover a body that has just sunk, or one that has been under water a longer time. In the use of grappling irons, a long bar, with several small hooks fastened to it, is considered the best type.

VI

RESUSCITATION

Actual Cause of Death

The actual cause of death from drowning is the stoppage of the supply of pure air to the lungs. The oxygen is gradually diminished, while the quantity of carbon dioxide is increased, until the air in the lungs becomes very impure; the blood passing into the heart is not properly purified; consequently, venous instead of arterial blood is circulated through the body. In a short time the person loses consciousness, the face becomes dark and congested because the veins are gorged with blood, and the heart ceases to beat.

Preliminaries Before Beginning Work of Resuscitation

The first essential is to get the person out of the water, and not a moment should be lost before commencing artificial respiration. In carrying the victim to shore do not have

his face downward, nor his feet higher than his head. Loosen the clothing around the neck and chest. See that the throat and mouth are clear of any mucus, sea-weed, or other material, so that the air may pass in and out freely; then lay the body face down. The rescuer should then stand astride the victim's body and, leaning forward, should

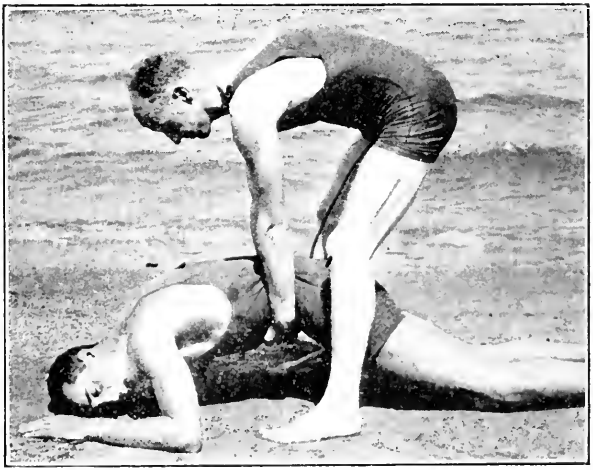


FIG. 53. SHAKING WATER OUT OF AN APPARENTLY DROWNED PERSON

grasp him with both hands under the waist. He should then straighten up, thereby lifting the center of the body from the ground, the

arms and legs remaining on the ground. In this position a slight shaking will force the water from the lungs, stomach, and throat (Fig. 53). After a moment of this shaking, lay the body on the ground in position for performing artificial respiration. Always work where there is plenty of fresh air, and if there is a crowd of spectators be sure to keep them well back from the victim.

Schafer Method

In 1903 Prof. E. A. Schafer perfected his method, which is recognized today as the safest, the most efficient, and the least complicated of all resuscitation methods. It can easily be performed by one operator for a long period of time. To employ this method, the victim should be laid face downward with the head turned to one side and the mouth opened. The upper arms should be put in a position at right angles to the body. The operator should kneel astride or on one side of the victim's body. He should place his hands flat in the small of the victim's back, on each side of the spine with the thumbs nearly touching, parallel to the spine and pointing toward the head, and with the fingers

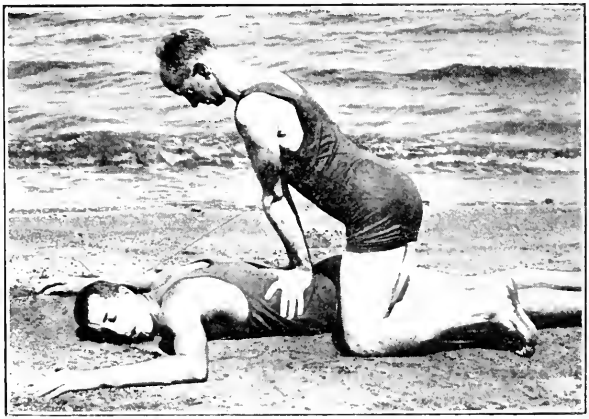


FIG. 54. SCHAFER METHOD OF RESUSCITATION—COUNT ONE

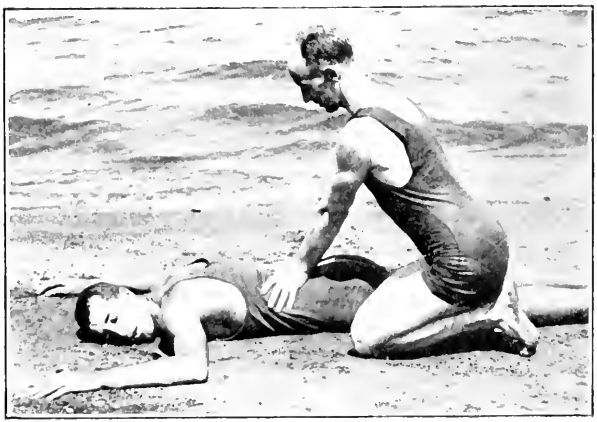


FIG. 55. COUNT TWO

spread out on each side of the body over the lowest ribs. He should lean forward, and, keeping the arms straight, steadily allow the weight of the body to fall upon them and so produce a firm downward pressure, which must not be violent, the object being to press downward toward the ground, in order to decrease the size of the chest cavity (Fig. 54). By this means the air is driven out of the victim's lungs. Then the operator should immediately swing backward, releasing the pressure rapidly, but without lifting the hands from the victim's body, thus allowing the ribs to spring back and increase the size of the chest cavity (Fig. 55). This pressure and relaxation is repeated by the operator as he swings his body forward and backward, twelve to fifteen times a minute, without any pauses.

Note: The very simplicity of this method is its greatest weakness. The fact that all men are human and that after a few hours' work at any method even the strongest will tire, makes it evident that a person could go through the motions described without putting much weight from the body on the arms; certainly not enough to drive *all* the air out

of the lungs. It has been found that the best way to offset this is to apply sudden pressure at the end of the firm and steady pressure, thus forcing the air out of the lungs. This should not be severe enough to injure, but it is necessary if you desire to free the lungs of all air. If this thought is always in the operator's mind, he seldom will neglect it and will be enabled to work efficiently for hours if necessary.

Pulmotor

The pulmotor is a recent invention that has accomplished wonderful results. It is an oxygen-fed machine primarily intended to induce respiration by artificial means in persons apparently drowned, etc., where breathing has stopped, but where there is still vitality. The apparatus inflates and deflates the lungs in a rhythmic manner, and the pulsations of the mechanism are so timed that the normal number of respirations per minute is obtained. Its motive power is an oxygen cylinder containing this gas under a pressure of one hundred and fifty atmospheres, which will supply a sixty per cent mixture of air and oxygen to the victim every forty min-

utes. When necessary this cylinder can be replaced with a new one in a few seconds (Fig. 56). The pulmotor has a decided advantage over artificial respiration by hand, in that it forces a larger amount of oxygenated air into the lungs than is possible by the ordinary methods. It can also keep it up for

FIG. 56. PULMOTOR

longer periods of time. It is so adjusted that it will force air into the lungs until it reaches a pressure of three pounds, the same as forced breathing in a healthy conscious man; when the three pounds pressure is reached,

the apparatus reverses mechanically until it obtains a negative pressure of three pounds, so that all the deoxidized air is thrown out, leaving the lungs empty and ready for another supply. The pulmotor weighs only about fifty pounds in its case, and it is therefore easily transportable. A great many cities are keeping one of these machines in an easily accessible place, and this number will grow as the value of the instrument is more widely recognized.[1]

Importance of Not Giving Up

The significance of not giving up after a few minutes' work over an apparently drowned person will hardly be felt until one has had the wonderful opportunity of working on a person for hours and finally of bringing him to consciousness. If there is any word or group of words that should be remembered above all others by those who are striving to resuscitate an apparently

[1] *Publishers' Note:* Another artificial breathing apparatus, known as the Lungmotor, has recently been perfected. The manufacturers claim that it overcomes several objections to other similar devices. There is some question whether any of the present mechanical instruments are as effective in cases of drowning as is the Schafer method of resuscitation. For use after gas asphyxiation or electric shock both of the foregoing machines have a good record.

drowned person, it should be—*Do Not Stop.* Life, in a large number of cases, has been restored only after long hours of unceasing effort on the part of the operator. There is, of course, a point where all efforts are unavailing, after the body has been in the water too long, but to make sure of all possible chances, one should work on a person who has been in the water less than half an hour, and should keep it up until the coroner or city physician tells him to stop. After a person has been under water for more than thirty minutes, there is very little chance of reviving him. When there is a pulmotor at hand, of course more efficient work is accomplished in a shorter time and without effort on the part of the operator. If there is need of sending any distance for the pulmotor the operator should do so and then commence work immediately by hand.

Procedure After Breathing Has Been Established

While the operator is at work over the victim, others may apply hot flannels to the limbs and body and hot bottles to the feet, or promote warmth by massage toward the

heart. Nothing should be given in the way of restoratives by the mouth, nor should you try to remove wet clothing until natural breathing has been fully restored. As soon as possible after breathing has been established, remove the patient to the nearest house (if the accident has taken place at a beach) and promote further warmth by hot applications to the pit of the stomach, armpits, thighs, soles of feet, etc. Care must be taken not to burn the patient. If there is pain or difficulty in breathing, apply a hot linseed-meal poultice to the chest. Watch the patient carefully to see that breathing does not stop.

Appearances Indicating Death

Some of the best indices of death are: No breathing or heart action, eyelids closed, the pupils dilated, the jaws clenched, the fingers contracted, the tongue between the teeth, the mouth and nostrils covered with froth, the skin showing "goose-flesh," and the body swollen and discolored. The tests for death are: Holding a mirror to the mouth and noticing whether any vapor is produced on the glass by the breath of the victim; sticking

a pin into the flesh and noticing whether or not the hole remains. If the hole remains, life is probably extinct. These are both supplementary to the final test, which is judging whether or not *rigor mortis* has set in; if the latter has occurred, one may be certain that all chance of resuscitation has passed, as life is extinct.

VII

METHOD OF DRILLING MASS CLASSES IN LIFE SAVING

How to Form Classes

In all probability the simplest matter in relation to life saving is the getting together of a group of people who are desirous of acquiring this art. In almost all cases where it is suggested that a class be started, the instructor will have sufficient applications to warrant going ahead. The first and really only essential that should be strictly adhered to is that no applicant for the class should be received who does not already possess advanced knowledge of swimming. The class should not be held back by one or more persons who are just learning to be at ease in the water. It is always well to impress upon the members the importance of perfect attendance throughout a course, as a lesson missed cannot be recovered except at the expense of

the class. While classes as high as a hundred can be handled at one time, still it is evident that a smaller group is more satisfactory. Unless it is impossible, the classes should have members who are alike in age, sex, etc. Neither classes made up of middle-aged men with boys, nor mixed classes, work very effectively.

Suggestions to Instructors

After a class has been formed, it is usually of very great aid if a local physician can be procured to give the class a lecture, illustrated if possible, on the organs of circulation and respiration. The first and most important lesson that should be given to pupils is to drive home to them the fact that, whenever there is need of rescuing a drowning person, danger is always present. The moment a person in the water loses control of himself, that moment is the one when the rescuer must remain cool and collected. If that is not made plain all else will fail, as a knowledge of what to do is useless unless a person can put it into effect under stress of great excitement. There should be strict supervision in the matter of laughter and fooling

among the pupils while engaged in practice. Nothing will spoil a class more quickly. An instructor will find that he must insist from the start that this be eliminated. There should be no ducking of persons who are being towed, nor any of the "horse play" that is usually indulged in by a group in the water. In other words anything that distracts the attention of the pupil should be severely criticized. If it is possible to have one or more assistants, they can be of great aid by walking among the pupils, and giving quiet personal attention to the detail of the work. Instructors must be clear and concise in their commands, which should be loud enough for all to hear. Care should always be exercised to allow sufficient time between the command and the execution of the movement.

Preliminary Drill

Even among good swimmers there is found a lack of drive in the "frog kick," and it is of great value to put a class swimming on their backs, with the arms folded across the chest or held out of the water. This cannot be practiced too often, as it develops the mus-

cles that will be most used in rescue work. It should be remembered that all drills on land are only preparatory to practice in the water, and they should therefore be of short duration only. For all members who have had no experience in mass drills, the following commands should be taught:

Fall In. At the command "Fall In," the class will form in a single line from the right flank, according to size, the shortest on the right.

Attention. At the command "Attention," each man takes the following position: "Heels on the same line and as near each other as the conformation of the man permits; feet turned out equally and forming with each other an angle of about forty-five degrees; knees straight and without stiffness; body erect on the hips, inclining a little forward; shoulders square and falling equally; arms and hands outward, palms toward body, elbows near the body; head erect and square to the front; chin slightly drawn in, without restraint; eyes to the front."

Right Dress—Dress. At the command "Dress," all will cast their heads and eyes to the right, and place themselves in a position

so that they can just see the breast of the third man down the line. The shoulders should not be deranged by this movement. Close in until the space of three inches remains between elbows as the arms hang naturally.

Eyes—Front. At the command "Front," all heads and eyes will turn sharply to the front.

Count Off—Count. All counts will be made in twos from the right flank; at the command "Count," the first man on the right calls "One," the second man "Two," the third "One," the fourth "Two," and so on until the entire class has counted off.

Right (or Left) Face—Face.

About Face—Face. When at a halt, to face to the right or left, or about face to the right or left, the following movement will be executed. At the command "Face," turn to the right through an angle of 90° (or 180°) on the right heel and the ball of the left foot; lift the left foot and place it beside the right. Face to the left in the opposite manner. To execute about face to the left, the command "Left About Face—Face," is given and is executed just the reverse from an about face.

Twos Right—March. At the command "March," each squad of twos wheels the amount indicated on a fixed pivot, turning strictly in place; the man on the marching flank maintains the full step, moving on the arc of a circle with the pivot man as center, taking two steps. Upon completion of the command, the squads will come to a halt. Twos Left is executed in the opposite manner.

From the Right Extended—March. At the command "March," number one of the front rank standing in place raises his left arm to "side horizontal" position. The remainder of the front rank raise both arms and "ease off" to the left by taking quick side steps, until each man's fingers just miss the fingers of his right and left hand man. The rear rank form behind their respective partners by side-stepping with them, but without raising the arms. Upon completion of the movement both lines will come to attention.

Right (or Left) Oblique—March. At the command "March," each man half faces to the side indicated and continues in the new direction. At the command "Forward—March," he resumes his original direction.

Steps. The regular marching step is thirty inches long. A half step is fifteen inches long. All marching should be at full step unless otherwise indicated.

Break. At the command "Break," each man will immediately release whatever "hold" he has and come to attention.

Halt. At the command "Halt," the class will cease whatever movement they are executing and come to attention.

Close Order to Right—March. At the command "March," the man at the right side of the line stands fast and every other individual executes the command "Sideways Right" by taking half steps to right until the line is closed and dressed.

Break Ranks—March. At the command "March," the line is broken, the class being dismissed.

In all advanced work the following short form of command will be given: "Fall In," "Attention," "Right Dress," "Eyes—Front," "Count Off In Twos From Right Flank—Count," "Twos Right—March," "Halt," "Left Face—Face," "From The Right Extend — March," "Front Rank About Face — Face."

Release Drill on Land

After the instructor has given the preliminary commands, and has his class in position, he will proceed as follows:

Release drill on land—Rear rank to act as rescuers.

First Method

One. At the command "One," the rear rank man will raise his hands in front of his face, having elbows bent and forearm in front of him; at the same time the front rank man, with his palms turned inward, grasps him by the wrists.

Two. At the command "Two," the rear rank man will take a short pace to the rear with the left foot, and extend his arms forward and upward, the front rank man retaining his grasp.

Three. At the command "Three," the rear rank man will then turn his arms simultaneously downward (in front of him) and outward, making the leverage come against the thumbs of the front rank man, which will break the hold. At the completion of the movement both men will resume their original position.

SECOND METHOD

One. At the command "One," the front rank man will raise his arms and clasp the rear rank man around the neck.

Two. At the command "Two," the rear rank man will place his left hand in the small of the back of the front rank man.

Three. At the command "Three," the rear rank man will swing his right arm outside of the left arm of the front rank man, and place the heel of the hand on the point of his chin with the index and middle fingers squeezing his nose.

Four. At the command "Four," the rear rank man will push away with the right hand and pull in or hold tight with the left hand. As soon as this command is executed, the rear rank man will release his hold and both men will come to attention.

THIRD METHOD

One. At the command "One," the rear rank man will take one pace to the front, the front rank man will then pass his hands around the rear rank man, grasping him around the body.

Two. At the command "Two," the rear

rank man will place his left hand on the right shoulder of the front rank man and swing his right arm over (or under) his left arm, placing the heel of the hand against the chin, his index and middle fingers squeezing the nose.

Three. At the command "Three," the rear rank man will lift his right knee and place it as high as possible against the abdomen of the front rank man.

Four. At the command "Four," the rear rank man will lean slightly over the front rank man and by means of a strong, sudden push against his chin with the right hand and his abdomen with the right knee, cause the front rank man to release his grip. At the execution of this command both men will come to attention.

FOURTH METHOD

One. At the command "One," the rear rank man will execute "Right About Face," and the front rank man will step up close behind him.

Two. At the command "Two," the front rank man will clasp both arms around the neck of the rear rank man.

Three. At the command "Three," the rear

rank man will lean forward, at the same time grasping the left hand of the front rank man with his left and the right with his right.

Four. At the command "Four," the rear rank man will throw his head back so that it will hit the nose of the front rank man; at the same time the rear rank man will wrench apart the arms of the front rank man. At the execution of this command the rear rank man will about face and both men come to attention.

This command should be executed slowly in order not to injure the partner while at practice.

Fifth Method

One. At the command "One," each man will take one full step forward to the right oblique, this bringing the men shoulder to shoulder.

Two. At the command "Two," the rear rank man will execute right face and the front rank man will left face.

Three. At the command "Three," both men will drop to the ground, lying on their right sides.

Four. At the command "Four," the front rank man will clasp the rear rank man around

the body with both arms and around the legs with both his legs.

Five. At the command "Five," the rear rank man will lean back and place his left hand over the front rank man's face and nostrils and, at the same time, with his right hand grasp one or more of the fingers of the front rank man.

Six. At the command "Six," the rear rank man will push away with his left hand, and with his right hand bend back the fingers of the front rank man until the grasp of the latter is loosened. At the execution of this command both men will rise and come to attention at their original position.

Sixth Method

The commands "One," "Two," and "Three" will be executed as in the "Fifth Method."

At the command "Four," the rear rank man will raise his body slightly, enabling the front rank man to clasp him around the body with his legs.

At the command "Five," the rear rank man will grasp the ankle of one foot of the front rank man in his left hand and the toes

and instep of the same foot in his right hand; then using his left hand as a vice, he will twist the foot in a circular motion with his right hand. At the execution of this command both men will rise and come to attention at their original position.

Very little pressure should be used in the execution of command "Five" during practice, as the pain produced is very great.

Note: In order that each man may go through the drill, the command "Change Ranks" will be given, at which time the front rank becomes the rear rank and vice versa, and the drills will be gone through in the same manner as before.

Release Drill in Water

A person may have the technique of the release drill on land almost perfect, and yet be unable to perform it in the water. **Actual practice in the water is absolutely necessary.** After the instructor has given the preliminary commands, "Fall In," "Attention," "Right Dress—Dress," "Eyes—Front," "Count Off In Twos From Right Flank—Count," "Twos Right—March," "Halt," "Left Face—Face," "From The Right Extend—March," as de-

scribed in the land drill, he will proceed as follows:

Release drill in water—Rear rank to act as rescuers.

First Method

Ready. At the command "Ready," the front rank will step to the edge of the float or pool and stand prepared to plunge.

Go. At the command "Go," the front rank will plunge into the water, swim a distance of at least thirty feet, "About Face," and by treading water remain facing the starting point.

Rescuers — Ready. At the command "Ready," the rear rank will step forward and be prepared to plunge.

Go. At the command "Go," the rear rank as rescuers will plunge into the water, and upon reaching the front rank will go through the drill as performed on land without further counts. At the completion of the command ordered, both ranks will swim back to the starting point and resume their original positions.

Note: After each method has been practiced, the command "Change Rank" will be

given and the drills will be gone through again with the positions changed, thus enabling each man to take the part of the rescuer. After the last method has been practiced, the class will be dismissed by the commands defined in the land drill.

Rescue Drill on Land

After the instructor has given the preliminary commands, "Fall In," "Attention," "Right Dress — Dress," "Eyes — Front," "Count Off In Twos From Right Flank—Count," "Twos Right—March," "Halt," "Left Face—Face," "From The Right Extend—March," he will proceed as follows:

Rescue drill on land—Rear rank to act as rescuers.

First Method

One. At the command "One," the front rank man will "Right About Face."

Two. At the command "Two," the front rank man will stretch out both arms, place the hands on the rear rank man's shoulders close to the neck, and lean his head well back.

Three. At the command "Three," the rear

rank man will raise both arms from the shoulders and push them forward, palms downward, to the full extent, below the front rank man's shoulders.

Four. At the command "Four," the rear rank man will carry his arms outward and backward as in the propelling position of the breast stroke.

Five. At the command "Five," the rear rank man will bring his arms to his body with his elbows pressing against his sides, forearms and hands pointing forward, with palms down.

Break. At the command "Break," the front rank man will "Right About Face," and both men will come to attention.

SECOND METHOD

One. At the command "One," the rear rank man will raise his hands and place them on the sides of the head of the front rank man, who will lean his head slightly back. The palms of the hands should cover the ears and the fingers should point toward the forehead. The rear rank man will keep his arms close together with the elbows bent. The front rank man will raise his arms

slightly toward side-horizontal with the elbows bent.

Break. At the command "Break," the rear rank man will drop his hold and both men will resume their original positions.

Third Method

One. At the command "One," the rear rank man will take a firm hold of the arms of the front rank man just above the elbows and let the fingers sink into the biceps with the thumb on the outside and the fingers on the inside.

Two. At the command "Two," the rear rank man will raise the arms of the front rank man until they are at right angles to the body, and both men will lean their heads slightly back.

Break. At the command "Break," the rear rank man will drop his hold and both men will resume their original positions.

Fourth Method

One. At the command "One," the rear rank man will step forward, push his arms under the armpits of the front rank man, and place his hands over his chest. At the

same time he will raise his own elbows, thus bringing up the front rank man's arms until they are at right angles to his body. Both men will lean their heads slightly back.

Break. At the command "Break," the rear rank man will drop his hold and both men will resume their original positions.

Fifth Method

One. At the command "One," the rear rank man will step one pace forward to the right oblique, bringing him in line with the front rank man.

Two. At the command "Two," both men will left face.

Three. At the command "Three," the rear rank man will put his left arm under the left armpit of the front rank man and lay his left hand across his chest.

Four. At the command "Four," the rear rank man will extend his right arm to the side as defined in swimming the side stroke, both men leaning slightly to the right.

Break. At the command "Break," the rear rank man will drop his hold and both men will resume their original positions.

SIXTH METHOD

One. At the command "One," the rear rank man will step one pace forward to the left oblique, bringing him in line with the front rank man.

Two. At the command "Two," both men will left face.

Three. At the command "Three," the front rank man will place his left hand upon the left shoulder of the rear rank man.

Four. At the command "Four," the rear rank man will extend the right arm to the right side and pull back with the left arm as defined in the side stroke, both men leaning slightly to the right.

Break. At the command "Break," the front rank man will drop his hold and both men will resume their original positions.

Note: In order that each man may go through the drill, the command "Change Ranks" will be given, at which time both men will right about face, the front rank becoming the rear rank and vice versa, and the drills will be gone through in the same manner as before.

Rescue Drill in Water

After the instructor has given the preliminary commands, "Fall In," "Attention," "Right Dress — Dress," "Eyes — Front," "Count Off In Twos From The Right Flank —Count," "Twos Right—March," "Halt," "Left Face—Face," "From The Right Extend —March," as described in the release drills on land, he will proceed as follows:

Rescue drill in water—Rear rank to act as rescuers.

First Method

Ready. At the command "Ready," the front rank will step to the edge of the float or pool and stand prepared to plunge.

Go. At the command "Go," the front rank will plunge into the water, swim a distance of at least forty feet, about face, and by treading water remain facing the starting point.

Note: In each of the remaining five methods, the front rank will not about face, but will tread water, facing away from the starting point.

Rescuers — Ready. At the command "Ready," the rear rank will step forward and be prepared to plunge.

Go. At the command "Go," the rear rank, as rescuers, will plunge into the water and, upon reaching the front rank, will go through the drill as performed on land without further counts, towing the front rank man to the side of the pool or float. At the completion of the command ordered, both ranks will resume their original positions.

Note: After each method has been practiced, the command "Change Ranks" will be given, and the drills will be gone through again in the changed positions, thus enabling each man to take the part of the rescuer. After the last method has been practiced, the class will be dismissed by the commands defined in the land drills.

Resuscitation Drill

After the instructor has given the preliminary commands, "Fall In," "Attention," "Right Dress — Dress," "Eyes — Front," "Count Off In Twos From The Right Flank —Count," "Number Ones Raising The Right Arm and Number Twos Raising The Left Arm—From The Right Extend—March," as described in the preliminary land drills, he will proceed as follows: (*Note:* The instruc-

tor should be sure that there is a space of from six to eight feet between each team of men.)

One. At the command "One," number one (the man on the right of the team) will go to the floor or ground, dropping first to the right knee, then to the left, and then falling forward on the hands, and will lie down on his chest, resting the left side of the face on the floor or ground, with the upper arms at right angles to the body.

Two. At the command "Two," number two will then go down on both knees, first right then left, astride of number one, facing to the front. He will then place his hands in the small of number one's back with the thumbs parallel, pointing toward the head, and close to the spine, with the fingers extended as wide as possible on each side of the body.

Three. At the command "Three," number two will lean forward, steadily allowing his weight to fall upon both hands, with elbows rigid, slowly but with a firm downward pressure, so that the lower chest of number one is pressed against the floor. At the finish of this pressure there should be a slight extra

push, not severe enough to be violent, and yet heavy enough to be sure that all the air has been forced out of the lungs.

Four. At the command "Four," number two will swing backward, releasing all pressure, but without removing his hands from the body of number one.

Go. At the command "Go," number two will continue in regular time, at the rate of twelve to fifteen times a minute, the movements described under the commands "Three" and "Four."

Halt. At the command "Halt," number two will complete command "Four" and will come to attention in a kneeling position.

Re-form. At the command "Re-form," both men will resume their original position in line at attention.

Change — Places. At the command "Change—Places," number twos will step backward and to the right, and number ones will step forward and to the left, until each is in the position vacated by his partner. All the class will then come to attention. The instructor will then proceed to repeat his commands with the men in the changed positions.

Note: At the completion of the drills, the command "Break Ranks" will be given, at which time the line will be broken and the company dismissed. An illustration of the method of operating a pulmotor or lungmotor should be given to the class, and if this is done clearly and carefully no drill with this is necessary.

VIII

ORGANIZATIONS IN THE UNITED STATES ENGAGED IN LIFE SAVING

Massachusetts Humane Society

The story of organized life saving dates back to 1785, when Dr. Noyes, a blind physician of Boston, with a group of fellow townsmen, met at the "Bunch of Grapes Tavern," and organized the "Humane Society of the Commonwealth of Massachusetts," with Hon. James Bowdin as their President. The Society was organized "for the recovery of persons who meet with such accidents as produce in them the appearance of death, and for promoting the cause of humanity by pursuing such means from time to time as shall have for their object the preservation of human life, and the alleviation of its miseries."

The Society was distinguished in various ways. On the beaches of Massachusetts, be-

ginning on Lovell's Island, in 1786, it built small huts in which people who escaped to shore from wrecked vessels could find shelter, and it placed in them fuel and food. It also built life-boats and placed the first one constructed at Cohasset in October, 1807. This date is important because it marks the first attempt made in America for the preservation of life from shipwreck. The Society gave rewards to all persons who especially distinguished themselves in saving life. The giving of medals to those who risked their lives to save the shipwrecked, appealed to and cultivated the love of honor.

From this humble beginning over a century and a quarter ago, the Society has grown until today it has about fifty stations along the Massachusetts coast. There is equipment now at all of these, but the amount and type of it varies at different stations. It includes large power life-boats, large and small surf-boats, dories, sets of guns and breeches-buoys, blankets, and fuel. The best boat used by the Society is a thirty foot self-bailing, self-righting power boat. It is similar to other life-boats in general appearance, with one exception. The propeller is located

in a sort of tunnel, aft, in order to enable the boat to be beached without injury to the propeller. It also saves the latter from becoming fouled with wreckage of any sort. Another valuable addition to the Society's equipment is an ice life-boat for the purpose of life saving on frozen lakes and rivers. It has specially designed runners, so that the boat can be pushed over the ice easily and also pulled on to the ice from the water. To enable it to return to the ice or shore without difficulty it is provided with an ice-kedge. Two of these boats have been in use for a considerable time, and it is the intention of the Society to place others on the banks of dangerous streams or ponds where there is danger that accidents may occur. Along the shores of some of the rivers and lakes, especially around Boston, are kept life-buoys and ladders fitted with strong sickle-shaped hooks, and apparatus for the recovery of people who have sunk to the bottom. Most of the stations have regular keepers to see that the equipment is in effective condition and that there are competent men to handle it. It is their duty to see that the required articles are at hand and that they are ready for instant

use. The keepers receive only a small salary for keeping the stations in order, but the crews are rewarded on occasion of their doing rescue work.

The work of the Society not only reaches shipwrecked cases and drownings, but deals with a great many first aid cases, and classes in general volunteer work. In their reports they give minute instructions to the captains and volunteer seamen: instructions for rescuing drowning persons; in resuscitating the apparently drowned; in first aid treatment of wounds, fractures, sprains, frost-bites, sunstroke, burns, poisoning, etc.

The entire work of the Society is charitable and no salary is received by any member of the corporation, which is governed by a board of twelve trustees. They make it a definite point not to solicit contributions, and simply request that persons who are willing to contribute to the support of life saving should inquire into the work being done by the various organizations which have this object. As in many such organizations, there is available only a limited amount of information concerning the results accomplished by this Society. Untold hundreds who have received

assistance are unrecorded, and a far greater amount of good has been done than can be stated in figures, for the value of precautionary means is inestimable. We can realize the efficient and well organized work that is being carried on, when we view the fact that over 2,000 awards in the form of medals, clasps, and certificates, and over $25,000.00 in pecuniary rewards, have been given out by the Society.

U. S. Volunteer Life Saving Corps

The organization now known as the U. S. Volunteer Life Saving Corps has been in existence over twenty years, but, owing to the lack of accurate records up to 1906, the historical facts remain somewhat obscure. Mr. Edwin P. Ayers and the late Col. J. W. Jones were the men most concerned in the formation of the Corps in New York. At first the work was supported wholly by subscriptions. In 1890 articles of incorporation were secured from New York State. On a subscription basis the work was started in a number of States. While subscriptions furnished the means for making a start, they were not sufficient to make it possible to

continue the work, unless local support was added. Consequently, many corps outside of New York State took the initial plunge, but found it difficult to keep the work going. Where there were officers in charge who were interested and enthusiastic in their work, the corps prospered, even with a lack of funds, and some of the original crews are doing good work today. In the majority of cases, however, when the funds for supervision were lacking, the interest in the work gradually died out, until today only a few remain. At that time persons who organized crews were given rank, and a boat crew of five men sometimes had a full complement of officers. There was no fixed rule or test as to qualifications for membership, and many men were accepted merely on their ability as boatmen. This system speedily resulted in a large membership, which was merely an enrolled one and not enlisted as at present (Fig. 57).

Today there are a number of stations scattered over New York, Massachusetts, New Jersey, Rhode Island, Connecticut, Pennsylvania, Florida, Maryland, and California. The largest amount of work being done is in and around New York City. The stations

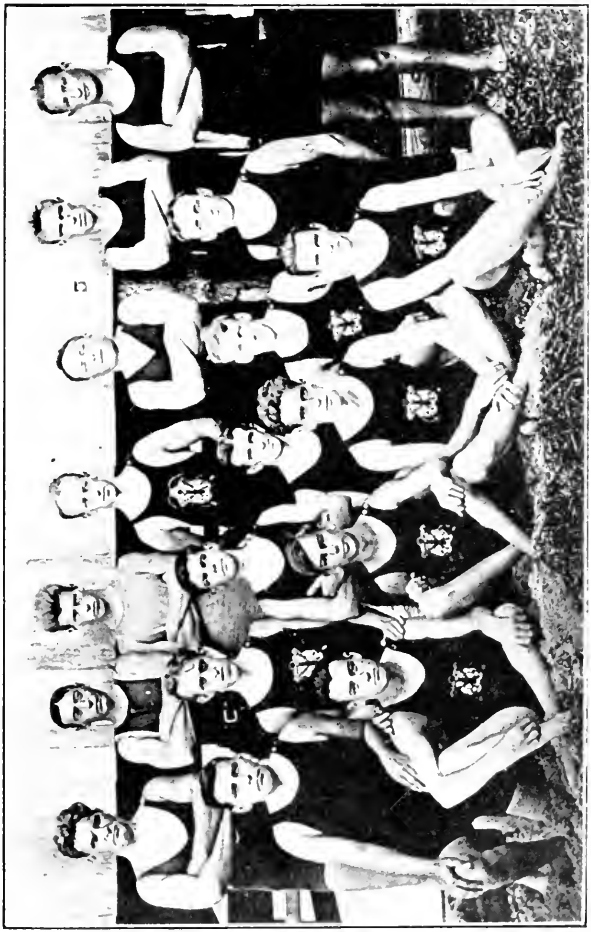


FIG. 57. U. S. VOLUNTEER LIFE SAVING CORPS, OAK BLUFFS, MASSACHUSETTS

vary as to equipment in proportion to their funds and location. Some stations have boats, buoys, ropes, lights, first aid cases, and extensive minor equipment, while at other places there is simply a buoy hung on a peg all the year round. The corps in New York has an appropriation from the City of New York. While the organization has enlistment blanks for each applicant to fill out, and various forms and documents which give the impression of a wide-spread movement, its greatest strength is to be found along the Atlantic coast and especially around New York City. Recently new corps have been formed in the south and west, and it is hoped to enlarge this number so as to make a more general membership. Each State where a corps exists has its Board of Governors, and it is possible for the organization to be represented in every State. This will be of inestimable value when it is brought about. There is also an auxiliary membership to the Corps in which there is a large enrolment, a great many coming from the members of the Young Men's Christian Associations who frequently spend the summers at camps or at water resorts.

Like many volunteer organizations, the personnel of the Corps changes from year to year, but it aims to have its members trained and competent. It is bearing down hard on practical life saving and is teaching its methods to thousands of people wherever they can be reached, regardless of age, sex, or condition. The Corps has on its records the names of thousands of people who have been rescued, or have been assisted, when in trouble in the water. In addition to the rescue work, many days of fruitless yet hard and disagreeable labor are spent in dragging filthy and muddy river, canal, and pond bottoms. A great many bodies have been recovered by the Corps in this manner, and have been turned over to their friends.

The Corps realizes that a practical working knowledge of life saving is of eminent value to any person living near the water. In places where people may be drowned by falling from docks or piers, or because of accidents in small boats or at bathing places, it is a great advantage to be able not only to take care of oneself, but to help others. In order to spread this information, the Corps gives to all classes of people illustrated lec-

tures on the different methods of rescue, release, resuscitation, and first aid. It also conducts many swimming events that interest large groups of expert swimmers, thus educating the people in advanced aquatic work. Awards and certificates are given after investigation of any rescue, and the number of these runs into the hundreds every year.

The work of the Corps is surely worthy of the highest praise, and it is hoped that in the near future it may be made more national and far-reaching. If there is any one person above others to whom the efficient work of the organization is due, it is Ex-Commodore W. E. Longfellow, who as General Superintendent had charge of the headquarters office in New York. A man of untiring devotion to his work, and exceptional ability along the line of his chosen occupation, Mr. Longfellow worked day and night striving to make the Corps a more efficient and better organized body.

National Woman's Life Saving League

Growing out of the U. S. Volunteer Life Saving Corps from a nucleus of ten women swimming teachers, was founded what is

known as the National Woman's Life Saving League. It has today over one thousand active members. Their work is entirely educational and altruistic. They conduct free classes in swimming at the municipal baths in New York, free competitions for the entertainment and benefit of their members, and public exhibition drills for the purpose of public instruction. The organization was founded entirely for work among women and children, and it aims "to encourage swimming among this class; to cooperate with organizations wherever advisable in the dissemination of knowledge on saving life from drowning and first aid to the injured; to encourage interest and promote efficiency in swimming and life saving by holding annual competitions for medals, prizes, etc.; to encourage and advocate simplicity and rationalism in bathing and swimming costumes; to establish an athletic branch for the supervision of athletics for women by women, in order to raise the dignity of such branches of outdoor sports, so that all women may participate in the healthful and instructive exercise of swimming and life saving; and to advocate the general adoption of swimming, life saving,

rescue, release, and resuscitation drills as a branch of elementary education."

This league is one that meets with the whole-hearted approval of every person interested in this subject, which is of as great importance to women and children as it is to men and boys. If branches of this league, or at least similar societies, can be formed in every city in the land, the day will rapidly approach when the deaths due to accidental drowning will be reduced to a minimum.

Young Men's Christian Association

Since its fundamental motive is to save human life, in a sympathy for distress which many feel but know little how to express, there is little wonder that the life saving movement was taken up as a definite piece of work by the Young Men's Christian Association. The first event that finally led to the present Association swimming campaigns occurred in 1907 when Mr. G. H. Corsan wrote to Mr. W. H. Ball, who was at that time physical director of the Detroit Young Men's Christian Association, asking for the opportunity of going to Detroit to teach swimming. It was finally arranged that he should go to Detroit for one

week. He remained three weeks, and the following year spent six weeks at that Association. Later Mr. Ball, in conference with Dr. G. J. Fisher, of the International Committee, discussed the possibility of the Association's using the full time of Mr. Corsan, who was entirely original in his methods and contagiously enthusiastic as a swimming instructor.

Mr. Corsan's first engagement resulting from this conference was to spend several weeks among the Brooklyn and New York Associations. His work was excellent and he succeeded in enthusing all the men with whom he came in contact, so that at a meeting of the Physical Directors' Society of the Young Men's Christian Associations of North America, held at Omaha, Nebraska, May 29 to June 5, 1909, it was unanimously decided to engage in a united social service endeavor which had for its aim, first, "The teaching of swimming to every boy and young man in North America who does not already know how to swim;" and, second, "The enlistment in such instruction of the boys and young men in the membership of the Association who know how to swim." The paramount

thought was to save as far as possible the lives of the thousands of persons annually lost by drowning in the United States and Canada. Arrangements were made with Mr. G. H. Corsan, whereby he became the campaign swimming instructor. Later his son, Mr. H. H. Corsan, joined the campaign staff, filling a number of engagements in the south during the fall of 1910. Engagements were secured for both the father and son, with the result that they were kept busy all the year.

The Corsans' method of instruction is unique in that they teach practically nothing but the "Crawl" stroke to beginners. Their aim is to enable the pupil in the shortest possible length of time to propel himself through the water. They usually take from twenty-five to seventy-five pupils at a time, all using water wings. Two lessons of thirty minutes each have generally been found to be sufficient to teach a beginner to swim the length of the pool. In the Association campaign, swimmers are divided into four groups, the tests and awards for these divisions which enable a person to go into a higher group being as follows: *Beginners*—All men and boys who were not able to swim before, but succeeded

in swimming at least fifty feet. *Swimmers*—To qualify, a pupil must swim fifty yards, dive properly, swim on the back fifty feet. *Leaders*—To qualify, a person must teach at least one person to pass the "Beginners'" test, swim two hundred yards, dive and bring up objects from the bottom. *Life Saver*—Dive into from seven to ten feet of water and bring from bottom to the surface a loose bag of sand weighing ten pounds; swim two hundred yards, one hundred on the back, without using the hands, and one hundred any other stroke; demonstrate on land five methods of release, in water two methods of release, Schafer method of resuscitation; rescue and tow a person of own weight a distance of twenty yards, using two different holds and strokes.

To recognize suitably the service of any member of a Young Men's Christian Association who saves the life of another person from drowning Life Saving Medallions are awarded. These medallions are in bronze, silver, and gold, the style awarded in each case being determined by the degree of danger involved and the skill and courage shown in making the rescue. Awards are granted

only upon the request of a Young Men's Christian Association over the signature of the President, General Secretary, and Physical Director. The cost of the award will be cared for by the local Association. Bronze, $2.50; Silver, $5.00; Gold, $15.00. The type of medallion granted will be decided in every instance by the National Committee on Awards.

The mere statement of the number taught to swim in these campaigns gives only a partial idea of the results accomplished. There are hundreds of young men and boys who have been given the fundamentals of swimming and life saving and who, although they cannot pass the test, have enough information to build upon, so that with a little practice they acquire the art of swimming. There are also a vast number who are influenced indirectly and who afterward determine to learn to swim. An impetus has also been given to other organizations to propagate similar movements. The first year of the campaigns, about 15,000 boys and young men received instruction; during 1911 and 1912 there were added nearly 30,000, and out of that number over 12,000 were taught to swim at least

fifty feet and pass the beginners' test. To date, over 300,000 young men and boys have received instruction since the organization of these campaigns, and over 1,000 have passed the test for rescuing and resuscitating persons apparently drowned. In addition, several hundred thousand have attended lectures and witnessed demonstrations of swimming and life saving.

To conserve and perpetuate the benefits of the swimming campaigns, it is the desire of many Association men to organize swimming and life saving clubs of ten or more members in every Association having a pool, or located near water where swimming and bathing is possible. At present there are about seventy-five of these clubs, although most of them emphasize only swimming. Many Associations have enthusiastic boat and canoe clubs, while even a greater per cent conduct summer camps where large groups of men and boys spend their vacations. Some of these camps have branches of the American Red Cross or the U. S. Volunteer Life Saving Corps.

While these plans are good, they do not meet the problem in a sufficiently definite way. For this reason, at the Physical Directors'

Society Conference in 1912, the swimming committee recommended that a National Young Men's Christian Association Life Saving organization should be formed. The committee was accordingly asked to draw up a constitution or form of organization and present it at the conference in 1913. The committee was unanimous on the value of the following points: the promoting, by correspondence, of life saving clubs in local Associations; the organization of a National Young Men's Christian Association Life Saving Society; the awarding of life saving hero medallions, after the receipt from local Associations of full and authentic information on the essential facts of any rescue reported.

These life saving clubs should have a constitution, officers, and committees thoroughly trained in methods of life saving, and equipped with apparatus, such as buoys, first aid outfits, charts, boats, etc. The object of the organization should be to promote life saving, so that every man would be able to rescue and resuscitate anyone in danger of drowning. There should be an element of competition, so that the men in the corps would be stimulated to develop themselves

as expert life savers. A national organization would guide the movement in the best way and make it a source of great good to every individual community. It should be the aim of every physical director to lower the percentage of those unable to swim, not only among the membership of his Association, but also among the members of the whole community, and to raise the percentage of those able to care for others as well as for themselves (Fig. 58).

An example of an efficient Association life saving group is the Student Life Saving Corps of the International Young Men's Christian Association College at Springfield, Massachusetts. During the fall of 1911 Dr. J. H. McCurdy's class in the "Gospel of the Kingdom" studied and discussed several of the existing conditions in the student life, one of them being the dangers of skating, canoeing, and swimming in and on Massasoit Lake. A committee was appointed to look into the matter of establishing a branch of the Massachusetts Department of the U. S. Volunteer Life Saving Corps. This committee met with Prof. G. B. Affleck and went carefully over all the details, such as the

FIG. 58. STUDENT LIFE SAVING CORPS, YOUNG MEN'S CHRISTIAN ASSOCIATION COLLEGE, SPRINGFIELD, MASSACHUSETTS

expense, time, etc., that such an organization would require of the students. Then the committee recommended to the Student Cabinet (and with the latter's advice to the student body, at one of the chapel exercises) that the students should take steps toward the organization of such a corps, the aim being to make it an integral part of the student activities. This was done, and a corps of about forty men were enrolled.

That the organization has proved a benefit to the neighborhood has been demonstrated beyond doubt. During the skating season, especially when the ice-cutters are at work, the people from the city have difficulty in telling the thin ice from that which is good, as new strips are cut each day and the open water freezes over rapidly. The aim of the corps is not to guarantee absolute protection, as the students have not the time to patrol the whole lake thoroughly, but rather to use precautionary methods, such as a patrol and lanterns, and when accidents occur to aid in rescue and resuscitation, if the latter is necessary. The corps has already had a number of rescues to its credit, the unfortunate victims having been taken to the college build-

ings, where hot baths and dry clothes were provided for them. The corps at this station is young, and like all young organizations, has a great deal to learn regarding the best hours for work, proper equipment, efficient service, and a sacrificing spirit. The men realize that a knowledge of self-preservation, when life is endangered, is just as important and as necessary in their work as skill in saving the victim. With the increase of this knowledge will come efficiency in saving life and maintaining health, with the minimum of personal risk. The members of the corps are instructed in definite and specific methods of rescue and resuscitation, with the idea of becoming more efficient in meeting the problems that will continue to confront them. In this manner those members of the corps who are in the graduating class each year will feel competent to organize and train similar groups in the communities that they may enter, thus carrying out the Association's policy of being of the greatest service possible to all mankind.

American Red Cross Life Saving Corps

The following outline of the purpose and

methods of the Life Saving Corps will give a clear indication of its scope.[1]

Organization and Government

As Life Saving is really "Water First Aid," it is, therefore, placed under the First Aid Division of the Red Cross, and is administered by the officer in charge of that Division with the cooperation of the National Committee of the Life Saving Corps, a subcommittee of the National First Aid Committee. The Chairman of the National First Aid Committee is also *ex-officio* a member of the National Committee of the Life Saving Corps.

Whenever a local corps is formed its members *ipso facto* become members of any Red Cross Chapter that may be in existence in their vicinity. Any local corps attached to a Red Cross Chapter should be represented either on the Executive Committee of the chapter, on its First Aid Committee, or both, as may be decided by the Chapter.

The Objects of the Corps

1. To develop sentiment and facilities for safeguarding human life from drowning.

2. To teach precautions that should be ob-

[1] The following section is taken from the circular issued by the American Red Cross Society, June, 1916.

served on water and "safety" or preventive measures necessary to avoid accidents.

3. To prevent drowning by:
   a. Teaching swimming and boat handling.
   b. Holding swimming and life saving exhibitions.
   c. Promoting swimming and life saving competitions.
   d. Giving instruction in the various methods of performing artificial respiration.
4. To rescue those in peril of drowning.
5. To resuscitate persons apparently drowned.
6. To teach its members first aid to the injured, and to instruct others, or non-members, in this work.

In accordance with the foregoing purposes certain standards of efficiency have been established.

A. FOR NON-MEMBERS:

1. Beginners must be able to swim fifty feet, using any stroke they prefer.
2. Swimmers must be able to swim one hundred yards, using two or more strokes; to dive properly from a take off; to swim on back fifty feet; and to retrieve objects at reasonable depths from the surface.
3. Life Savers must be able to tow a person of their own weight ten yards by each of the following methods:

a. Head carry, using two hands and swimming on back.

b. Under arm carry, using two hands and swimming on back.

c. Across chest carry, using one arm and side stroke.

d. Using breast stroke, hands of rescued on shoulders. They must be able to show in the water three methods of releasing themselves from people in peril of drowning when grasped by:

(1) Wrist hold.

(2) Front neck hold.

(3) Back neck hold.

They are required to demonstrate both the Schafer and Sylvester methods of performing artificial respiration, although the Schafer method is the one preferred.

Candidates who qualify for any of these grades before a Board of Examiners of a city, district, or local Life Saving Corps may purchase appropriate buttons either from the First Aid Division or from a local corps.

B. FOR MEMBERS:

The establishment of the foregoing grades of swimming efficiency is meant to lead up to the higher standard of efficiency required of candi-

dates for membership in the Life Saving Corps. First Aid to the Injured will be taught to members, and the art of swimming and of boat handling. This instruction must be developed further by frequent practice.

Membership is restricted to men of good character, who must be eighteen years of age or over. After passing prescribed life saving tests, and agreeing to enroll themselves for service for a period of two years, they may become members of local corps upon payment of the necessary fee to the Red Cross.

The tests which candidates for membership are required to pass are the following:

1. Give written answer to five questions on rescue and resuscitation work, attaining an average of 75 per cent.
2. Explain and demonstrate the Sylvester and Schafer methods of artificial respiration.
3. Tow a person of their own weight for a distance of fifty feet.
4. Keep a person of their own weight (who is dressed in trousers, coat, and shoes) afloat for one minute.
5. Dive from the surface of the water to a reasonable depth and bring to the surface a ten-pound sand bag.
6. Break the following holds:

On Land:

a. Wrist hold.
b. Front neck hold.
c. Back neck hold.
d. Both arms and body.
e. Over and under shoulder.

In the Water:

a. Front neck hold.
b. Back neck hold.

After joining members are expected to familiarize themselves with the waters of the locality which their corps has elected to cover or which has been assigned to it.

In order that yachtsmen, canoeists, and other individuals who are constantly on water and yet are unable to affiliate with any fixed station or local corps may become members, provision has been made for non-corps members, or *members-at-large*.

To join the Life Saving Corps as a non-corps member, candidates must take the same tests as applicants for membership in local corps from a Board of Examiners, and after passing will receive the member's medallion, paying the usual fees to the First Aid Division.

To provide supervision of the dangerous waterways of our populous centers, the formation of permanent local Life Saving Corps is authorized. Such corps are self-supporting under the rules

and regulations of the American Red Cross. Authority to form local corps and applications for charters for same must be made to the officer in charge of the First Aid Division American National Red Cross, Washington, D. C.

To include persons under eighteen years of age in the membership, when considered desirable by local corps, auxiliary corps, composed of boys *under* eighteen may be organized as adjuncts to them. Requirements for membership in auxiliary corps are the same in all respects as those for local corps, except for the age qualification.

The organization of auxiliary corps permits the entry of Boy Scouts, members of the Boys' Department of the Young Men's Christian Association, Boy Clubs, etc.

Fees

When joining a local corps each member shall pay an initiation fee of $2.00, to be forwarded to the First Aid Division, American Red Cross. This amount will go to pay the cost of the American Red Cross Life Saving medallion for members, the certificate of membership, and the monthly *Red Cross Magazine*. Each succeeding year thereafter on January 1st, $1.00 must be forwarded by every member to the Bureau of Membership at the National Headquarters unless they come under the jurisdiction of a chapter, in which

event the money should be paid to the secretary of the Chapter. Any additional fees to be paid to local corps for their current expenses shall be determined by those organizations.

All plans for raising money, except as to membership fees or assessments, examination fees, etc., must be submitted to the First Aid Division for approval.

Officers and Crews

The officers of local corps include the President, Vice-President, Secretary-Treasurer, Medical Officer, Captain, Mates, and the Instructor.

The Medical Officer, Captain, Mates, and Instructor of Life Saving Corps will all be selected on account of special fitness for the particular work required of them. In order to obtain the services of a man of position and influence it is not obligatory for the President to pass the water tests. The Executive Committee of a corps will consist of the President, Vice-President, Secretary-Treasurer, and Captain.

Local corps are divided up into crews of from six to ten men each, under a mate, the number of mates and crews to be determined by the Executive Committee of each corps.

Uniforms

In order that members of local corps may be

recognized while on duty on land and in water certain uniforms have been adopted.

On land this is a dark blue serge sack coat, trousers, and yachting cap, with the official corps emblem worn on the front of the cap and on the left sleeve of the coat above the elbow. Suitable designations for the different grades of officers are permitted and should be worn on the right sleeve above the elbow.

For water work members will wear dark blue bathing suits of decent pattern, with the bathing emblem of the corps appearing on the breast. This emblem is a white life buoy, with red bands and the initials L. S. C., A. R. C. In the center of the ring is a Red Cross.

Equipment

Where the local corps are organized in yachting clubs or by steamship companies, in their buildings or on their ships, the equipment, of course, will belong to such organizations. In all other circumstances property purchased or acquired by the Life Saving Corps of the American Red Cross shall be vested in the Red Cross.

Caps, sleeve devices, bathing emblems, medals, medallions, and life buoys may be purchased from the First Aid Division, American Red Cross. Catalogue will be furnished on application.

Quarters for corps should comprise a suitable

building or room, with appropriate furniture for the same.

The life saving outfit should include a regulation boat (18-foot dory), oars, rowlocks, first aid equipment, additional supplies for chests, ring buoys and lines, grappling and dragging apparatus, blankets, and stretchers. Each buoy should hang on a frame, with rope so coiled on pegs that the buoy will be ready for instant use. Frames should be painted a uniform color and be stenciled with the name of the corps.

All equipment should be frequently and regularly inspected.

Local corps and crews may be organized among the members of the police and fire departments, dock departments, crews of steamship piers, public baths, private natatoriums, summer resorts, bathing beaches, summer camps, and in all of the branches of the Young Men's Christian Association, and similar organizations throughout the country.

Awards for Proficiency

Efforts should be made by every legitimate means to encourage proficiency in life saving work. Frequent competitions should be held, and in addition to competitions conducted by local corps it is planned, when the organization has progressed sufficiently, to have an annual

national life saving competition covering all branches of the work—that is, swimming, diving, life saving, buoy throwing, boat handling, etc. All members are urged to make themselves as proficient as possible in these various branches of life saving work. If this is carried out it will mean the practical certainty of saving lives whenever accidents occur.

At competitions First Aid Medals and Certificates will be awarded by the Red Cross to successful contestants.

Cash donations, cups, articles of personal utility, or of equipment for local crews or corps may be donated by those interested in the work. Just as prizes are offered for the best First Aid Work performed throughout the country, so there will be awarded annually prizes for the four best instances of life saving by members of the American Red Cross Life Saving Corps in the following amounts:

First	$50.00
Second	25.00
Third	15.00
Fourth	10.00

It is the earnest wish of the Red Cross that its Life Saving Corps may be instrumental in preventing the loss of many lives.

How to Form a Life Saving Corps

1. A Board of Examiners, consisting of three men, should be obtained. This may be done in two ways:

a. The First Aid Division, American Red Cross, Washington, D. C., will, whenever practicable and upon request, furnish the services of a life saving expert, provided assurances are given that a corps will be formed if the individuals desiring to organize one are able to pass the tests mentioned for membership.

b. When the services of an expert from the Division are not available any Board of Examiners of a corps already established may give the written and the practical tests to all who desire to make application for the charter, or they may pass three men who desire to form a corps and recommend them to the First Aid Division for appointment as a Board of Examiners. Such a Board when authorized to act may pass the other prospective members of their corps.

2. Ten men must qualify before an application for a charter can be filed. When the proper number of individuals have passed the tests and have elected a President, Captain, and Instructor they should forward their application with two

dollars per capita to the First Aid Division American Red Cross, Washington, D. C., upon receipt of which a charter will be issued.

United States Life Saving Service

The Life Saving Service of the United States is the most efficient organization in existence for the preservation of life and property from shipwreck. Previous to the organization of this important branch of the Federal Government, there were thousands of lives lost along our shores. Now while we sit in our comfortable homes on stormy winter nights, the men of the Life Saving Service are patrolling in an unbroken line the storm-swept shores of our Atlantic, Pacific, Gulf, and Lake coasts. Year after year the men of the Service are called upon to brave dangers before which the most courageous hearts might hesitate, and yet these men meet them calmly and coolly. Desperate and dangerous chances are taken, but they are known to be so beforehand. As a brief review of their work will show, they deliberately go forth to save the lives of others, knowing in every instance that they are imperiling their own.

In February, 1871, Mr. Sumner I. Kimball

was appointed General Superintendent of the Life Saving Service. Previous to that time, although the Government had expended considerable money for the "preservation of life from shipwreck," there had been no efficient and systematic work performed. Houses had been built and equipped, but through neglect and misuse had become ruined. From the date that Mr. Kimball was appointed until the present time, the Service has prospered and grown until today no country can boast a better organization than ours. The able work and the self-sacrificing spirit of this man have in large measure made this possible. Taking a position at the head of an organization that was far from being efficient, he has raised the standards until today there is no group of men under any flag who are more competent in the performance of their particular duty than our "Heroes of the Coast."

The sea and lake coasts of the United States are divided into districts with a total of over 280 life saving stations, located at special points of danger. When we realize that the coast line of the United States, exclusive of Alaska, is over 10,000 miles in

extent, we can realize in a small measure the enormity of the task confronting the Service. The character of the coasts varies from the rocky headlands of Maine to the sandy shores of the Middle Atlantic States. The storms vary from the terrific onslaught of the nor'easters that drive many ships upon the shores of the North Atlantic coasts, to the furious convulsions of the Great Lakes that arise with a suddenness unknown upon the ocean.

The personnel of the Service consists of a general superintendent, who is the chief officer, a chief inspector who is an officer detailed from the Revenue Cutter Service, an assistant inspector for each district, a superintendent who is in charge of each district, a keeper who has the direct control of all the affairs at each individual station, and the regular surfmen who are selected as a result of examinations provided by the Civil Service Commission. The examination is not scholastic, but is based on experience, physical condition, and age. The number of men comprising a crew varies with each individual station. This is determined by the number of oars required to pull the largest

boat at each station. Six men is about the average. The stations are plain buildings, designed to serve as homes for the crews and to house the boats and apparatus. Surmounting every station is a lookout or observatory in which a watch is kept during the day. Each station is usually equipped with a self-righting, self-bailing power life-boat, a surf-boat, a boat carriage, two sets of breeches-buoy apparatus, life-car, cork jackets, heaving sticks, Coston signals, signal flags, patrol lanterns, a medicine chest, a barometer, a thermometer, patrol checks, and the articles necessary for rude housekeeping. As far as possible, all the stations are connected with each other or with local exchanges by telephone.

The twenty-four hours are divided into a day and night watch. The day watch is kept from sunrise to sunset by a surfman who is stationed in the lookout. The night watch is divided into four watches: the first, which is from sunset to eight o'clock, is known as the "dog watch"; the second is from eight to twelve, the third from twelve to four, and the fourth from four to sunrise. If the stations are within five miles of each

other, two surfmen start out at the beginning of each new watch, one in each direction along the coast, and proceed to a half-way house that is located midway between the stations. Here each exchanges a metal check with the surfman from the neighboring station and then returns to his respective station. If no other station is near, a post is placed at the end of the "beat" and on it is placed a key which fits a time-clock, which each surfman carries. He registers the time and then returns. Upon the discovery of a wreck he fires his Coston signal, which gives off a bright flame, letting the persons aboard ship see that they have been sighted, and then he proceeds to the station or half-way house and gives the alarm.

In order to attain as great a degree of efficiency as possible, drill and practice with the beach apparatus and boats is carried on every week. A friendly rivalry results between the crews of the nearby stations and surprising feats are accomplished in both day and night drills. During actual rescue work, when storm, tides, surf, and the movements of the vessels in distress make rescue work dangerous, no great speed can be attained.

The familiarity with the apparatus and the efficiency developed in practice, however, produce a speed that is remarkable.

Most interesting is a general summary of the work of the Service, since the introduction of the present system in 1871 until 1911, a period covering forty years. Over 20,000 disasters were recorded, involving the lives of over 150,000 persons. Of this number less than one per cent of the lives involved were lost. The vessels and cargoes involved were valued at approximately $300,000,000. The amount saved, including both ships and cargoes, reached nearly $250,000,000.

The hardships that have to be endured by the surfmen and keepers are tremendous, and there is no body of men who are more earnestly striving to carry out the true principles of altruism than these of the Life Saving Service. Quiet and reticent, they hardly ever refer to the experiences in which they have participated, and they look with distrust upon the news reporter who tries to "pump" them for a story. They have no fabulous salary to look forward to, and they usually stay in the work because they love it. Coming, most of them, from families brought up on the coasts,

they naturally desire to help ships in distress, and they would perform their personal duty, even without the well organized Service of which they are members. Some of the most harrowing experiences are met by them in a simple and yet heroic manner. Long patrols to make through stinging, biting winds and blinding sands; the performance of their duty in the dead of winter, resulting often in frozen toes, fingers, etc.; the finding of dead bodies along the shore after some severe storm has played havoc with shipping—all these experiences are met in their day's work, but are seldom referred to when these big-hearted heroes gather round their warm stoves of a quiet evening.

IX

SUGGESTIONS

Canoeists and Boating Parties

Canoeing and boating parties should always remember that in case of an upset they should, under all conditions, unless able to swim a good distance, remain by the overturned boat. Many lives have been lost by a miscalculation of the distance to shore. An ordinary rowboat will keep six or eight people afloat. All should hang on to it, but should not climb into it. Do not stand up in a boat or rock it. This is even more dangerous when in a canoe. Do not try to change seats by walking around in the craft. If you fall from a canoe without upsetting it, and desire to climb into it again, do so by climbing in over one end, not at the middle (Fig. 59). In a rowboat get in over the stern. In getting into boats and canoes, if doing so from a float or low wharf, step into the middle of the craft and not on the gunwale or

FIG. 59. CLIMBING INTO CANOE OVER THE END

FIG. 60. STEPPING INTO MIDDLE OF CANOE

near the side; observe the same rule in getting out (Fig. 60). When paddling in a canoe, always have the paddles working on opposite sides. In a storm, or in the wake of a steamer, do not get in the trough of the waves, but head into them or go at right angles, pointing into the wind as near as you possibly can and still get the direction desired.

Skaters

If you break through the ice, first ascertain whether or not you can touch bottom with your feet. If beyond your depth, try to slide yourself out flat on the surface of the ice, remaining in a prone position. If you have a jack-knife in your pocket, open the large blade, and by stabbing it into the ice you can usually get a firm hold and draw yourself out, keeping the body and legs close to the surface of the water by remaining in a prone position. Fatal accidents would be rare if skaters would always carry jack-knives in their pockets. They would both aid themselves and others. If assistance is at hand, you should strive to cooperate and not imperil the rescuer and yourself by unthinking efforts. Rescuers should look at once for

ropes, rails, ladders, poles, tree branches, etc. A coat can be stretched out, if the rescuer can get near enough to the drowning person. Many lives have been saved by rescuers forming a chain, one lying flat on the ice and being pushed out by another to the person in danger, each holding the feet of the man in front. The foremost man of the chain should have a stick or pole that he can keep flat on the ice, thereby distributing his weight over a greater surface.

River skating and lake skating, where ice-cutting is going on, are especially dangerous and great care should be observed. Skating should never be attempted alone after dark or when the ice is covered with snow. Tracks of other skaters can sometimes be followed, but these are often deceptive, as a number of days may have passed, and the ice may have become dangerous since the tracks were made. Look out for places where there are bridges and sharp turns or narrow passages, where the water is deep and the current strong, or where brooks enter a river.

Bathers

When a person unable to swim falls into

the water, he usually rises to the surface, throws up his arms, and calls for help. The arm uplifted is thus deprived of the water's support, and in addition to the fact that water has been swallowed, this changes the weight that is so evenly balanced, and immediately the person goes under again. The proper position for one that cannot swim is the upright position of the walker on land, with head thrown fully back and immersed, the mouth and nostrils alone remaining above the surface. In this position most persons float without difficulty and without exertion.

Avoid bathing in quiet and secluded spots, as, should an accident occur, a very dangerous condition may result. The best time to bathe is about an hour or two before a meal, but on no account should you bathe shortly after a hearty meal, or when exhausted from physical exercise, or when the body is shivering. Always see that the bowels have moved freely previous to entering the water; if this habit is formed, the danger from cramps in the stomach is greatly reduced. Always keep the mouth and nostrils clean, so that breathing may not be impeded. Breathe

freely, naturally, and regularly. Avoid remaining too long in the water if subject to chills.

Persons subject to giddiness, faintness, numbness, palpitation, or other heart troubles should not bathe in open pools or at beaches without first consulting their medical adviser. Those subject to ear-ache, deafness, or discharge from the ears, should use ear stopples, plug their ears with cotton, or cover with water-proof caps, before entering the water. They should avoid deep diving. If taken with cramps, keep calm, turn on the back and rub the affected limb. If seized in the leg, relax the toes, straighten the leg and rub the muscles by applying friction massage, then kick the surface of the water until the pain is diminished. If the cramps are in the stomach, try to get air enough to enable you to go under the water if necessary, and thoroughly rub and massage abdominal muscles; repeat this, coming to the surface for air as often as necessary, until relieved. If you are carried out beyond your depth, by tide or current, try to make the shore farther down stream rather than to buck the current head on.

Campers

There is an unnecessarily large percentage of campers drowned every year. In a great measure this is due to carelessness. At all camps provision should be made for swimming at certain hours under supervision, and this should be strictly adhered to, especially at boys' camps; some camps are so strict about this point that a boy is sent home immediately when he breaks this rule. A great many campers are thoughtless about when they go into the water, and many have no notion at all of conditions at the spot where they are bathing. Campers usually pick secluded and lonely places for their camping sites, and their bathing places for this reason are more than ordinarily dangerous. Follow closely these suggestions to bathers, skaters, campers, and boating parties, and the chances of accident will be greatly reduced.

General Precautions

In swimming pools great care should be exercised to ensure proper supervision. No boys' classes should ever be allowed in the pool unless an instructor is present. When the boys' classes are in the pool, it is ad-

visable to stretch a rope across it at the point where the bottom starts to drop away. This can always be used in emergency cases as a life-rope to be grasped and held to.

Bathers should remember that if they are in need of assistance, and a life-buoy is thrown to them, they should simply hold it with the hands and not try to climb on to it.

Life saving is a local or municipal problem. Cities and towns have a real responsibility for many of the drownings that take place. Danger points are not guarded; children are allowed to swim or skate in dangerous streams and canals, and no safe public baths are provided. If the State handles the problem and educates the people to their individual responsibilities, great good can be done. The municipalities should take care of the specific needs of their communities. Guards should be kept at all swimming pools and at all main points where skaters gather. A system of different colored balls placed on a conspicuous flag-pole and indicating the condition of the ice is an excellent plan, showing when the ice is good, fair, poor, and bad. At all spots on public lakes where ice-cutters are at work, they should be made to

enclose the dangerous area with red lanterns after each day's work. At all points of danger there should be placed life-buoys with ropes where they can be reached quickly in case of danger near by. All cities should provide municipal teaching of swimming. All children should be compelled to take this instruction as a part of the educational system. If these suggestions were carried out, together with the solving of the peculiar problems that face each city, the number of fatalities that occur each year would be greatly diminished, and thousands of valuable lives would be saved.

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